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THE
Husbandman's Directory;
OR THE
INTELLIGENT FARMER:

BEING A COMPLETE
SYSTEM OF USEFUL KNOWLEDGE.

IN FOUR PARTS, *viz.*

1. Of Agriculture and Husbandry, in which is laid down the Methods of Cultivating Grain, &c. with the most advantageous Manner of managing Pasture grounds, and improving all kinds of Natural Grasses.
2. The Nature and Cure of every Disease incident to Cattle; with the most approved Receipts.
3. Farriery made easy; in which is pointed out the Diseases and Accidents a Horse is subject to; and efficacious Remedies prescribed. With Rules to know the age of a Horse, while he has Mark, and after he is past it.
4. A complete Calendar of Gardening: comprehending the Business to be done therein at all Seasons; with Directions for Sowing, Planting, Pruning, Transplanting and Engrafting.

TO WHICH IS ADDED

Instructions for making of English Wines; with a
Number of Original Receipts.

Likewise, a number of useful Receipts in Cookery.

By FRANCIS MILLER,

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PART I.

O F T H E

Several Kinds of GRASSES,

With their MANAGEMENT.

General rules for ordering the ground for grasses.

THE best season for sowing grass seed is the latter end of August, and the beginning of September, that the grass may be well rooted before the frost set in, which is apt to turn the plants out of the ground, when they are not well rooted. This seed should be sown in moist weather, or when there is a prospect of showers; towards the middle of

March will be a good time, if the season is favourable.

The land on which grass seed is intended to be sown, should be well ploughed, and cleared from the roots of noxious weeds, such as couch-grass, fern, rumes, heat, gorse, broom, rest-harrow, which, if left in the ground, will soon get the better of the grass, and overrun the land. Therefore, in such places where either of these weeds abound, it will be a good method to plough up the surface in April, and let it lie some time to dry; then lay it in small heaps and burn it. The ashes so produced, when laid on the land, will be a good manure for it. The method of burning the land is particularly useful; especially, if it is a cold stiff soil: but where couch-grass, fern, or rest harrow is in plenty, whose roots run far under ground, the land must be ploughed two or three times pretty deep in dry weather, and the roots carefully harrowed off each ploughing; which is the most sure way to destroy them. Where the land is very low, and of a stiff clayey nature, which holds water in winter, it will be of singular service to make some under-ground drains to carry off the wet; which if detained too long on the ground will render the grass sour.

Before the seed is sown, the surface of the the ground should be made level and fine, otherwise the seed will be buried unequal.

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The quantity of grafs-feed for an acre of land is usually three bufhels, if the feed is clean, otherwife there muft be a greater quantity allowed; when the feed is fown, it muft be gently harrowed in; and the ground rolled with a wooden roller: which will make the furface even, and prevent the feeds being blown in patches. When the grafs comes up, if there fhould be any bare fspots, where the feed has not grown, they may be fown again, and the ground rolled, which will fix the feeds; and the firft kindly fhowers will bring up the grafs, and make it very thick.

Where land is designed to be laid down for many years, it will be proper to fow with the grafs feed fome white trefoil, or Dutch clover; which is an abiding plant; fpreads clofe on the furface of the ground, fending forth roots at every joint; and makes the clofeft fward of any, and is the fweeteft feed for cattle: fo that, whenever land is laid down to pafture, there fhould always be fix or eight pounds of this feed upon each acre.

The following fpring, if there fhould be any thiftles, ragwort, or fuch other troublefome weeds, come up among the grafs, they fhould carefully be cut up in a fpaddle before they grow large; and this fhould be repeated two or times in the fummer, which will effectually deftroy them; for if thefe plants are fuffered to ripen their feeds, they will be

blown all over the ground; their seeds having down adhering to them, which assists their transportation; so that they are often carried by the wind to a great distance, and thereby become very troublesome weeds to the grass.

Of several kinds of Grasses, with their management.

Of Nonsuch. Nonsuch trefoil is biennial, or lives but two years; it goes by the several names of nonsuch, black seed, and hopclover. The seeds are yellow, and covered with black husks: it will grow upon the poorest land that is; and though worn out by frequent tillage, yet it will produce good and profitable crops of grass. It makes early pasture, which is very good for cattle, especially for cows, causing great increase of milk; and the hay is very nourishing and fattening, provided it be mowed and made whilst it is full of yellow blossoms, and not over dried, being soon moved; and then it will not lose its colour, nor shrink in making, as the clover grass does, being much finer and greener. It is also exceeding good for ewes and lambs, being a sound feeding, and free from rottenness. Nor is it subject to surfeit the cattle, as the clover; and therefore it is very good, for preventing this mischief, to mix in the sowing one moiety of this seed with one of clover,

ver, which thrive very well together, and afford good hay and good pasture for all sorts of cattle. It is sown in spring upon corn, and must be harrowed in with bushes, or bush-harrows; and at the same time a wooden roller should be drawn over the ground to press in the seed, and to make the surface smooth. Twelve or fourteen pounds of clean seed is sufficient for an acre; but in the hulls, a bushel and a half or two bushels should be allowed. When it is designed for seed, it must not be mowed for hay, nor pastured in spring, as is the method with broad clover.

Of Saint-Foin, (Onobrichis). This grass is also called cockshead, or French grass; it will grow upon barren, dry strong grounds, hardly fit for corn or grass; but of all clays and other cold and wet soils, though deep and rich, will not bear it. There is such vast improvement made with this seed, that grounds not worth two shillings an acre, may be made thirty or forty shillings. It is a large and light seed, and therefore you must allow six bushels to an acre, though some allow but three or four. It is a very sweet and nourishing herb, but above all, it is observed to increase milk in quantity and quality beyond any grass yet known in the whole world; wherefore it is adviseable to keep cows upon it for a dairy. If rightly ordered at first, it will last fifteen or twenty, some say thirty years

years, without any emendations of dung, where the land agrees with it: but it is best to be sometimes mowed and sometimes fed. The true saint foin is imported in great quantities from Dunkirk or Calais; and is sold at the seed shops in London and elsewhere. There is a bastard sort in Berkshire, Wiltshire, and many other counties; but it is much inferior to the true saint-foin. The seasons for sowing it, are from the beginning of August to the end of September; and in spring, from the beginning of February till the end of March; and the earlier it is sown in either season the better. In autumn the tillage must be as if for wheat, finely plowed, and also harrowed; and then sow it and harrow it again to cover the seed. In autumn it must be sowed alone without grain; but in spring with oats or barley, and two bushels of either is enough to an acre. In spring, the husbandry must be the same in all respects as for summer corn. New broken ground cannot be sown with it; but if the ground be presently turned up after the crop is off, and well harrowed, it may be fit to sow the spring following. The ground sowed with this seed must be well fenced in, and secured from cattle the first year: the second it may be mown, and fed much about Allhalontide; but if the weather proves wet, the cattle should be turned out, for fear of spoiling the roots.

roots before they are thorough strong, which will not be till the third year; but always after, as long as it lasts, it may be either mowed, or fed at pleasure. When it is designed to be mowed, it must be laid in about Lady-day, and it will be fit to mow about the middle of May, if in full bloom. It is made in all respects as other hay, and is very good for all cattle, except sheep, as being too gross for them, breeding store of milk; but in the winter season it is good for sheep.

Great Clover. That is best that is brought from Flanders, and bears the great red or purple honeysuckle, its seeds being much the size of mustard-seed, but more oblong; and that the greenish yellow colour is most liked. Mortimer says the English seed is best; and such as is of a greenish colour with a cast of red, that which is black never growing so well. Take care that it be good new seed, otherwise your crop will be but indifferent, there being great deceit used in it by many seedsmen. You may know whether the seed be good, by trying it in a glass of water, where all that swims is to be rejected. There is a certain fly which is sometimes known to eat this seed in the ground, but that inconvenience is easily prevented, by steeping it for the space of a night in foot, and as much urine as will make it a liquid. I advise never to sow less than twenty pounds of seed upon
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an acre. Many, no doubt, will object against this as a double charge, because it is common to sow no more than ten or twelve; but a man that is not quite ignorant, will easily imagine, that the thicker this little seed is sown, the thicker it will spring, and the better keep down all weeds and common grass, and consequently become of double advantage.

I advise to sow it in August or September, and alone, instead of sowing it in the spring, and with corn, which has many conveniences; it will rise thick, and swarth the ground, before the hard weather comes in, and thereby not only gather strength to defend itself against the winter frosts, but will be so early in the spring, that you might mow it the first time in the very beginning of May or perhaps sooner: it is fit to cut when it begins to knot.

When the first hard frost have bound the earth so fast that you may bring horses upon it without damage to the roots of the clover, this is the very point of time in which you should bestow about eight or ten load of sea-owse, sea-sand, sheeps dung, &c. upon every acre, if heavy land; if light land, chalk, marle, clay, &c. taking care to spread it as equally as may be, that when the frost dissolves, the rain may drive the strength of the manure into the earth, which in the tender infancy

infancy of her new turf will easily admit it, to the nourishment of the roots and surprising increase of the clover, both as to quantity and sweetness.

Three years your clover thus managed will thrive amazingly, and produce an unexpected profit; but let not that tempt you to continue it longer. At the end of the third summer break it up, and after two ploughings sow it in spring with barley; take two crops of wheat successively, and then without manuring, lay it down with clover. Always observe an alternate husbandry; three years ploughing, and three years clover. You cannot guess the advantage which will accrue, by a strict adherence to this one rule. Your land so managed will for ever retain its full vigour, yearly afford the largest crops, and never fall under a possibility of being worked out of heart: a fate, which almost all the lands in England are forced to submit to, by the present practice.

This is a very profitable grass, and will produce three or four crops in a year, that is, three to mow, and one to feed cattle the following winter.

It very much enriches ground, and chokes up and kills weeds. It succeeds best on a good loamy soil, but will grow very well upon chalky, and most other kinds of land that will bear corn.

It is good for cattle, sheep and swine, either in the green herb or hay, and causes great increase of milk.

When cattle are turn'd in to feed at large upon it, this must be done gradually, and with great caution; for if they are at once but moved from common grass into this, they will over-feed upon it, and even burist themselves. They are therefore to be put in at first only for half an hour in the middle of the day; the second day they may be left in an hour, and the third, two or three hours. After this, for three or four days, they are to be turned in as soon as the morning dews are off the ground, and driven out again before the evening dews fall; after which it may be safe to let them remain in it entirely.

It is no bad method some have of sowing rye-grass with clover, as it prevents it from blowing, (swelling) the cattle. This upright grass grows well enough among the branches of the clover, shooting up its stalks above it, and being eaten with it, takes off from its too great richness, at the same time that it makes the crop the larger.

In the ploughing for clover, you must lay the land as level as possible, and sow the seed soon after the plough, harrowing it with a bush harrow, and at the same time a roller should be drawn over the ground to press in the

the seed, and to make the surface close and smooth.

This herb will blossom and bring seed the first year of sowing : but when you have a mind to save seed from it, you must cut the first crop as soon as the clover begins to knot or joint, and the crop following must be left for seed : when you can cut it only twice, because of the time the seed takes to ripen. You must remember to let it stand till the seed is full ripe. An acre will commonly produce about five bushels of clean seed.

Though this herb be cut close, it is not long before it springs ; and when the last cutting every summer, either for hay or seed, is over, the best management to preserve it is, to turn in cattle upon it, to feed it bare before winter comes on, lest it grow too rank to bear the frosts, and then it will be safe : for the frosts, though they often destroy the leaves of the clover, yet never hurt its roots, unless they happen to lie bare.

This grass takes up more time and labour in the making into hay than the common grass, and must be well attended.

The clover that is intended for seed, must be preserved dry all the winter, and in the month of March it is to be threshed for the seed. When seed first comes out, it is to be cleansed from the straw, and the husks then are to be threshed again. When all is ob-
b. tained

tained that can at one time, let the straw be well dried in the sun, and tossed about with a rake; and then on the threshing it again, more seed, in considerably quantity, will be obtained.

Clover or honeysuckle grass with white flowers.

This grass may be frequently seen growing with the common red honeysuckle or marle grass, but not near so common. If any person has a mind to try this large white honeysuckle grass, he must look into some meadow, where it grows naturally, and may stand till it is ripe; the roots should be marked when they are in flower, and when the seed is full ripe it must be gathered by single leads; and the April following it may be sown in a little plat of ground, which will produce seed sufficient to begin with: afterwards it may be sown and saved in any quantities, as easily as broad clover.

Lucern (Medica) by some called Medica Clover. For sowing this seed, observe the same method in ordering the ground as for other seeds. It must be sown about the middle of April; and some oats may be sown with it, but not so great a proportion as with other seeds. The land must be well dressed, and at least three times fallowed. It may be mown twice or three times every year, and fed all the winter; the hay, if well made and ordered, is good fodder for all kind of cattle;
and

and there is no plant which increaseth the milk in cows so much as this, or will fat oxen so soon. It must be given with caution at first, for fear of surfeiting; so that it is best to be mixed with two thirds of barley-straw for a fortnight, afterward an equal quantity of straw will do. An acre will serve three horses all the year at pasturage, and will soon raise them to flesh and make them fat. It is of a warm nature, very nourishing and useful for fattening sheep, as not being any ways apt to rot them.

If it be mowed but once a year, it will last ten or twelve years; but if oftner, not so long. The lucern in the field is also a very serviceable food for cattle: it thrives in all the different soils that can be met with. I can say that it grows equally strong in every soil; but where it thrives least it is much preferable to any grass or clover that ever grew there before it. It is particularly a great improver of hot burning lands, which lie much exposed to the sun, having a very juicy stalk.

The first very year of sowing it will be about eight inches high in two months; but don't cut it too soon, lest you weaken the root. The second year, if it is upon the soil it likes best, you may cut it three times, and leave a large crop upon the ground for winter. You must sow one fourth less than you

do of the great clover, and it may be sown like it.

The time of grazing upon the lucern, is from the end of September till the end of February, or a week later at farthest; and turn your cattle into the field as soon as you have carried in your last crop of hay from it.

Horses feeding upon this grass in the spring, are purged by it better than by any other other grass; but they will be brought to it discreetly, and allowed the use of it very moderately at first: but it gives a horse a gay appearance.

After the second cutting of the lucern each year, you may if you please, let it stand for seed, which will ripen the same summer, then cut off the heads of seeds, and let them dry upon sheets or bafs mats and thresh them out. Or else there is a mill, such as they use for clover seed, which will clear them from the husk much better. It is to be noted, that as soon as the heads of ripe seeds are cut from the plants, the lucern must be mown and made into hay, taking care to turn it often, that it may be thoroughly dried before the hay is carried into the barn: for it will not do well in a rick or cock. After this crop is mown, it will presently recover itself for a winter grass for cattle. The hay, if it is well dried, will keep two years.

Another

Another method of ordering and sowing lucern, which is by some thought preferable to the foregoing.

Chuse a piece of land that is warm, pretty deep, and dry; let it be fenced, and ploughed a foot deep; or if it is a small piece of land, it may be trenched by men 16 or 18 inches deep, let the surface be made very smooth, either by harrowing or raking. With a gardener's hoe draw small drills about an inch deep, and a foot and a half apart, all across the land; and, if possible, the drills should run north and south.

The seeds must be scattered equally thro' all the drills, and covered over about half an inch deep with the fine earth that came out. Six pounds of seeds is full enough for an acre; for it must sown too thick. The beginning of May is the best time to sow this grass, but it might be deferred a month or two longer if the land cannot be prepared sooner.

In about three weeks or a month after sowing, the lucern will appear in rows, when the ground should be carefully hoed, and the weeds and wild grass that come among the lucern in the rows pulled up with the fingers. If the lucern should come up too thick in some places, and too thin in others, the young plants, where they are too thick, should be carefully raised up with trowels &c. and planted where the rows are too thin; and

at the same time should be watered; but if the feed should come up too thick all over, it must then be thinned with discretion. Hoeing and weeding should be frequently repeated, if the ground requires it.

The crop that was sown the beginning of May will produce flowers in August, when you may begin at one end of the piece to cut, and carry it to the animals that are to be fed with it. By cutting a parcel every day, you should go over the whole in six or seven weeks time, when you may begin again, and go on as you did before. In February the spaces between the drills should be dug, and the weeds that grow among the lucern roots picked out, and buried at the same time. About the middle of May full wing, and sometimes sooner, you may begin to cut again, and so day by day till you go over the whole. This grass will, in this manner, afford four or five cuttings every summer, beginning in May and ending in October; and so it may be continued many years, provided the spaces are dug every winter, and hoed in summer, every time just after the grass is cut. Lucern feed might be saved in England, when it proves a hot dry summer.

Spurry. Spurry, spurgrass, or stargrass (spurgula.) This grass is well known in Germany and Flanders, from whence any one may have it. It grows about a foot high,
full

full of branches, resembling a little bush, the flower is white, and the plants appear without leaves: the flower is succeeded by little white pods, like those upon flax, which contain small black seed, a little flat, with a whitish border round them. The richest milk, and the best butter in Germany is produced by this feeding; and it preserves the cattle in health. It is there preferred before any other fodder; nay even before grain. The straw alone is much more nourishing than the best hay, and the very chaff is esteemed as good as hay for the use of cattle; and the grain is excellent for feeding pigeons and poultry in the winter; it will bring them to lay and breed very forward.

It is a plant of that nature, that the most barren sandy lands will produce it, and it grows as well upon the most harsh stony gravels, or upon fallows. It may be sown any time in the summer, though the soil be never so stiff; and upon chalk of any sort. You may sow it in March or April with oats for the sake of the seed: and in August or after harvest for feeding of cattle or sheep. It is said that mutton fed with spurry grass has an excellent flavour. In a word, it is so advantageous to the husbandman, that no one should be without it; for sheep, goats, kine, all sorts of poultry, and bees delight extremely in it. The land should be very
fine

fine and even, and the seed harrow'd in with a bush harrow ; ten or twelve pounds of seed will be enough for an acre. As this grass is annual, if it be sown in March or April, the seed will be ripe in July or August.

Terennial Dwarf Trefoil with white flowers, called Dutch Clover. Where the land is rich, this grass will rise above a foot high, with large leaves ; but if poor, it keeps close to the ground, and produces very small leaves. It is generally sown with other grass seed upon such lands as are designed to be kept for pasture or mowing. Sixteen or eighteen pounds may be sowed upon an acre. This seed being small, the land should be made very fine before it is sown, and then should be lightly run over with a bush harrow, and rolled in order to press down the seed, and to make the land close and smooth. It may be sown in spring upon corn, or any time after till the middle of August, if the weather should be moist.

The best white clover seed comes from the Dutchies of Juliers and Berghs, and other neighbouring towns in Germany. It grows thicker, lasts longer, and covers the ground better than the seed which is imported from Austrian Flanders ; and is larger, and of a brighter colour.

Key Grass or Bents. This grass will last six or eight years ; and will grow upon stiff clay
or

or gravelly soils, and succeed much better than other sort of grass will do upon such unkind land. It produces very early pasture for most kinds of cattle; and makes excellent hard hay, if it is cut while the sap is full in it. It may be sown in spring or August. If it is sown with oats or barley, two or three bushels of seed will be enough for an acre; but if it be sown alone, four or five bushels will not be too much, for grass is always better for being thick. It is often sowed with great clover to prevent it from blowing the cattle; and does also very well, mixed with white clover, upon moist clay ground.

Birds foot, or Finger-grass. This grass produces yellow butterfly flowers, which are succeeded by three or four longish seed pods, growing on the tops of the stalks, which resemble the foot of a bird, or the fingers of a hand.

It is a lasting grass, and may be worth sowing with other perennial grass seeds. Farmer Ellis recommends it as an excellent grass for cow pasture, &c. Mr. Miller says, no animal will eat it either green or dry. Several times I have gathered many handfuls of it, which I gave directly to horses and horned cattle, and they eat it greedily.

Ribwort, or Lamb's tongue. This is the narrow leaf plantain, which grows very common all over this kingdom. In some countries

tries it is sown in spring, with other grass seeds, for pasture, &c. being thought a very wholesome herb for all sorts of cattle. The seed being very small, a pound or two mixed with the other grass will be enough for an acre of land, but alone, there should be four pounds.

How to get good Hay-feed. If we consider that the proper time to mow grass for hay is when the meadows are in full bloom, or just after, we shall easily perceive the impossibility of having the seed of the finest and best sorts of grass from common hay-lofts, as those grasses, perhaps, were cut a month or six weeks before their seeds were ripe.

To get good meadow grass seeds, make choice of some fine upland meadow, that is stocked with the best kinds of grass, and free from weeds. This grass should not be cut before the general part of the seeds are pretty near ripe when it should be mown, and spread till it is dry enough for threshing. The seeds may either be threshed out upon cloths in the field, or this work may be done in a barn, as is most convenient. The seeds must be made clean by sifting, &c. and put into sacks, in order for sowing. Hay seeds thus saved, must be of great value; and far preferable in every respect to any other, to sow for pastures, lawns, &c. This hay will not be so valuable; but the great advantage of the

the seed will make ample amends for the loss.

How to sow Hay-seeds, and order the land.
The best time to sow hay-seeds is April or May, after the frosts are over ; or in August, that the crop may get strength before winter. Five or six bushels of this fine hay-feed will be sufficient for an acre. If five or six pounds of white Dutch clover was added to the hay-feed it would be the better, for grass cannot well come too thick.

The land should be made very clean and fine, by ploughing and harrowing before the hay-feed is sown ; and if any Dutch clover or perennial trefoil are to be added, they should be sown after the hay feed ; because these small heavy seeds are much easier dispersed equally over the ground alone, than when mixed with lighter seeds. When all the seeds are sown, they should be harrowed in with bushes or light bush harrows, and the surface rolled twice in a place, in order to press in the seeds, and to make it smooth and firm.

From time to time, as bad weeds appear, they should be rooted out, and not suffered to become large and rampant. In February or March, or sooner, gross land should be rolled with a heavy roller, in order to squeeze down the small hillocks, to leave the ground firm, and to make the turf come with a much thicker bottom.

Upland meadows require manuring more than pasture ; and it is much better for the the land, when it can be alternatively meadow and pasture. Manures may be laid upon grass-land any time from Michaelmas to Lady-day, as the work can be done with most convenience, but the sooner the better. The best season is generally thought to be in December, January and February. For such grounds as are sandy, hot and dry, use marle, chalk, lime, or the like cold soils ; and for cold, rushy, spewy, and mossy grows, use wood ashes, turf of sea coal ; also pigeons dung, and all hot and sandy soils. And between the two extremes, i. e. hot and cold, use the common dung that is made by horses, &c.

Of watering and other particulars concerning Meadow and Pasture-land. Where you have an opportunity, and engines sufficient to overflow your wet meadows, let it be done about six weeks before mowing time, and again afterwards for a second crop, but mind never to let the water lie on the ground about forty-eight hours.

Dry meadows being often pestered with ant-hills, shrubs, fern, broom, or gorse, when they become so bad that they cannot be mowed without great loss, plough up your mole-hills, &c. with a mole hill plough ; then burn the hill to ashes, which may be done
with

with the help of a little straw, &c. to set them on fire, and spread the ashes all over your ground, and harrow them in with bushes and it will produce a good crop.

Directions concerning the mowing of Grass-land. The best judgment that can be made of the time when grass should be cut for hay, is, when you find it going to seed, or that the seed-stems are full grown. Some grasses indeed are sooner ripe than others, and there is no field without mixture ; but you must judge by the prevailing grass in the field, and should observe whether that this is in perfection, before you offer to mow your meadow. You must likewise examine, whether the grass begins to turn yellow at the bottom, as well in the blade as in the stalk ; for if it does, there must be no time lost, as it would soon spoil all the rest. The weather is next to be considered ; whether it is likely to be a wet or dry season, for the whole success depends upon that, If the weather seems to be settled fair, then you may cut your grass, according to the rules of reason ; but if it has been very dry for several weeks before, and your ground is naturally dry, with a gravelly bottom, it is better then to feed such grass than to mow it, even tho' it should be nearly ripe, as the roots in that case would be greatly weakened by being too much exposed to the influence of the sun, and hardly produce any other crop the same year ;

and the ground would also be subject to crack. But if it be fed, there may likely come rain sufficient to enrich the ground, so as to bring a good after-crop; and while feeding, the air and sun will be gently admitted to the roots without scorching them, and assist the cattle at the same time in such a manner, as may make them perhaps as much valuable, as the price of the meat they feed upon would come to. But suppose every thing concurs for the mowing of grass; you must let it lie as thin as possible at first, in the day time, if the weather is fair, and against the evening make it up at first in small cocks, which must be spread soon in the morning, if the fair weather is likely to continue; but if the weather inclines to rain, let it remain in cocks till it is fair. By degrees in good weather, as the grass grows dry, the cocks may be enlarged, till at length the hay is quite dry, and fit to carry into the barn, or be made in ricks. But particular regard must be had to the dryness of the hay before it be carried in; for if any moisture is remaining in it, it will be subject to fermentation, and burn all your store.

The upland grass will be much sooner made into hay than the lowland; for the grass of the uplands is generally fine and small, and has few juices in comparison of the lowland or marsh grass. So the trefoils, clovers, saint-foin, lucern, and other French grasses, will

will take more time to dry, than any of the common grasses, because they abound in juices.

Directions about mixing foreign Grass-seeds, when intended only for hay or pasture, and not for seed. Some farmers sow ten pounds of broad clover, and one bushel of rey grass or bents upon an acre. This mixture, they say, prevents the clover from blowing the horned cattle, when they have liberty to pasture intirely upon it.

In Buckinghamshire they sow five or six pounds of great clover, three pecks of black seed, which is nonsuch in the husks, and half a bushel of rey grass on an acre. This, they say, makes both good hay and pasture.

Eight pounds of nonsuch trefoil, and the same quantity of great clover allowed for an acre, makes good wholesome pasture for all sorts of cattle; and, if cut when the trefoil is in full bloom, very fine hay.

Two bushels of rey grass, and one bushel of black seed, or eight pounds out of the husks, which is much the same, allowed for an acre, will produce exceeding good forward pasture, and likewise the best of hay. If the rey grass is a full crop, it may remain upon the land several years. I have observed both rey grass and nonsuch will succeed well on cold, stiff, chalky, or gravelly land.

Six pounds of nonsuch trefoil, sown with sain-soin upon an acre, would be of great advantage to the first crop of hay. The quantity of sain-soin seed need not be lessened for this; because the trefoil will be gone after the first mowing.

The foreign grass seeds mixed may be sown with corn in the spring, as is before directed.

Some farmers make no allowance for grass seed, but sow the same quantity of corn upon an acre, as if there was none; when they might save at least one third of the corn, and both crops would prove the better.

Of the Management of Turnips.

Turnips delight in a light, sandy, loamy soil, which must not be rich; for in a rich soil they grow rank and are sticky, but if it be moist they will thrive the better in summer, especially in fresh land, where they are always sweeter than upon an old worn-out or a rich soil.

The common season for sowing of turnips, is any time from the beginning of June to the middle of August, or a little later; though it is not adviseable to sow them much after, because, if the autumn should not prove very mild, they will not have time to apple before winter, nor will the roots of those which are sown after the middle of July, grow very large, unless the frost keeps off long in autumn. But, notwithstanding this is the general

neral season in which the greatest part of turnips are sown in the country, yet, about London, they are sown successively from March to August, by those who propagate them to supply the markets with their roots; but there is a great hazard of losing those which are sown early in the year, if the season should prove dry, by the fly, which will destroy whole fields of this plant while young so that where a small quantity for the supply of a family is wanted, it will be absolutely necessary to water them in dry weather; and where a person sows those seeds in Aprill and May, it should always be upon a dry soil; otherwise they seldom come to good, the heat of the weather at that season being too great for them upon a dry soil but those which are sown towards the middle or latter end of June, commonly receive some refreshing showers to bring them forward; without which it is very common to have them all destroyed.

These seeds should always be sown upon an open spot of ground; for if they are near hedges, walls, buildings, or trees, they will draw up, and be very long topped, but their roots will not grow to any size.

They are sown in great plenty in the fields near London, not only for the use of the kitchen, but for food for cattle in winter, when there is a scarcity of other food; and this way is become a great improvement to
barren

barren sandy lands, particularly in Norfolk, where, by the culture of turnips, many persons have doubled the yearly value of their ground.

The land upon which this seed is sown, should be ploughed in April, and ~~twy~~ two-fallowed in May, that is once more ploughed and twice well harrowed, and made very fine; then the seed should be sown pretty thin; for it being small, a little will sow a large piece of ground; one pound is the common allowance for an acre of land. The seed must be harrowed in as soon as it sown, with a short-tined harrow, and the ground rolled with a wooden roll to break the clods, and make the surface even. In ten days or a fortnight after sowing, the plants will come up; at which time, if the season should prove dry they will be in great danger of being destroyed, by the fly; but if it so happen, the ground must be sowed again, for the seed being cheap, the chief expence is the labour; but the ground should be first harrowed to loosen it, especially if it is stiff.

When the plants have got four or five leaves, they should be hoed to destroy the weeds, and to cut up the plants where they are too thick, leaving the remaining ones about six or eight inches asunder each way, which will be room enough for the plants to stand for the first hoeing; the sooner this is performed

performed, when the plants have four leaves the better they will thrive ; but in the second hoeing, which must be performed about a month after the first, they should be cut up so as that the remaining plants may stand fourteen inches distance, or more, especially if they are designed for feeding of cattle, for where the plants are allowed a good distance, the roots will be proportionably large; so that what is lost in number, will be over-gained by their bulk, which is what I have often observed. But in such places where they are sown for the use of the kitchen, they need not be left at a greater distance than ten inches or a foot, because large roots are not so generally esteemed for the table.

The greatest evil which attends a crop of turnips, is that of their being destroyed by the fly, which usually happens soon after the plants come above ground, or while they are in the seed leaf; for, after they have put out their rough leaves pretty strong, they will be past this danger. This always happens in dry weather; so that, if there should be rain when the turnips come up, they will grow so fast, as to be in a few days out of danger from the fly, and it hath been found, that those, which were sown in drills, have escaped the fly much better than those sown in broad-cast; but, if soot is sown along the surface of each drill, it will be of great service to keep off the

the fly, and a small quantity of it will be sufficient for a large field, where the drills only are to be covered.

Another danger of the crops being destroyed, is from the caterpillars, which very often attack them, when they are grown so large as to have six or eight leaves on a plant. The surest method of destroying these insects is to turn a large parcel of poultry into the field, which should be kept hungry, and turned early in the morning into the field; these fowls will soon devour the insects, and clear the turnips.

In order to save good turnip seeds, you should transplant some of the fairest roots in February, placing them at least two feet asunder each way, observing to keep the ground clear from weeds, until the turnips have spread so as to cover the ground, when they will prevent the weeds from growing. When the pods are formed, you should carefully guard them against the birds, otherwise they will devour it, especially when it is near ripe; at which time you should either shoot the birds as they alight upon the seed, or lay some bird-limed twigs upon it, whereby some of them will be caught; and, if they are permitted to remain some time, and afterwards turned loose, they will prevent the birds from coming thither again for some time, as I have experienced. When the seed is ripe it should be cut up, and
spread

spread to dry in the sun ; after which it may be threshed out, and preserved for use.

The chief use of turnips is, to feed cattle in the winter and spring, when there is a want of grass for their pasture. Cows, oxen, and hogs, are very fond of this food, which fattens them and increases the milk of the former. Sheep too eat it readily, and thrive upon it, when they have been used to it early ; but they do not relish it when it has not been offered them till they are grown old ; however, if they are kept fasting two or three days, most of them take to it, and when they have once tasted it, they become very fond of, and feed kindly upon it. In some places, they feed their lambs with turnips till the middle of April, though they then begin to run up to seed. Farmers choose rather to do this, than to let them hurt their clover, sainfoin, lucerne, &c. Some par-boil them a little, at first, till their cattle, and particularly their sheep, are accustomed to them ; but a lamb only three weeks old, will, after it has once eaten of this food, scoop out a raw turnip with great glee.

Turnips, if not clean eaten, and well cleared off the ground, may take root again, run to seed, and do great damage to the ensuing crop.

The practice of turning a flock of sheep, at random, into a large field of turnips, is very bad ; for they will then spoil more in a fortnight than would keep them a whole winter, The
best

best way, therefore, of feeding them with these roots, is one or other of the three following methods, which are equally applicable to the drill, and to the common husbandry.

The first is, to portion out the turnip-ground, by inclosing with hurdles so much only as the sheep can clear in one day ; and and so to advance the folds further into the field every morning, untill all be spent. But it is to be observed, that the sheep never eat them clean this way, but take only the leaves and the heart of the turnip : so the greater part of them remains in the earth. It is true that these fragments, if left there, rot, and become a manure ; but when they are wanted for the food of the flock, and are to that end pulled up with iron crooks or forks made for this purpose, the sheep do not relish, and consequently eat but little of, these then dirty withered remains, tainted with their urine, dung, &c. nor can they nourish them so well as roots which are cleanly.

The second method differs from the former only in pulling the turnips so far as they are hurdled off, before the sheep are turned in. They then eat them better, because the food is fresh and in good condition. Besides, as the whole turnips are pulled up more easily than their pieces can be, there is not such waste as in the other way. The turnips which grow next to the hurdles should be
fed
thrown

thrown towards the middle of the space hurled off, because they will be less liable to be trampled upon and spoiled there, than nearer to the hurdle, where the sheep run most, in search of means of escaping into the open field.

The third way is to pull up the turnips and carry them into some other ground, and there spread them every day on a new place, where the sheep will eat them up. This is done when there is land not far off, which has more need of dung than that where the turnips grow. The expense of carrying the turnips is compensated by raising the price or at least the carriage and removing of the hurdles: only when the turnips are laid on a spot of grass, as is frequently done in wet weather, the benefit of the dung and urine of the sheep is lost.





Of the Management of various species of Corn, as Wheat, Barley, Oats, &c.

General Rules for all kinds of Grain.

OF C O R N.

IF Corn be lodged, it may be cut before it is quite ripe; and if blighted, it cannot be cut too soon. But if neither of these accidents happen, both wheat and barley should be suffered to stand till full ripe. The grain will also grow plumper by being left awhile in the field after cutting, to take the dew; but the straw will be injured by it; nor must it by any means be laid up damp in the mow, lest it heat, and become what is called mow-burnt; and perhaps take fire. A great number of weeds will produce the same effect, if the corn be housed before their stalks are sufficiently withered.

A correspondent of the authors of the *Museum Rusticum* tells us, that in the year

1763,

1763, he had twenty acres of barley, which was rather weedy at harvest: on which account he was desirous of giving it as much field room as he could conveniently; but the weather promising to be very wet, he was obliged to cart his barley, which he put into the bay of a large barn.

Whilst this work was going forward, he was called away, and in his absence his son got a horse upon the mow to tread it; by which means, the weeds, not being thoroughly dry, caused the barley to heat to so violent a degree, that he was very apprehensive of its firing.

“ My men, adds he, were in a violent hurry to get it out of the barn: but this I would by no means consent to. I however ordered one of them to get upon the mow with a cutting-knife, and cut in it a round hole like a well. He began the work; but in about five minutes, being almost overcome by the heat, I sent another to relieve him; and thus they worked spell and spell, till they got to the bottom.

“ This round hole saved my barley, and perhaps my barn too; for it formed, as it were, a chimney or flue, to carry off the heat.



Of the Management of Barley.

BARLEY is generally sown either after a fallow, or on an earh or second crop. If after a fallow, the land must be ploughed at least three times; and at the first ploughing, it should be laid in small ridges, and in that manner remain during the winter for the frost to mellow it: but if another ploughing can be given it in January, or in the beginning of February, the ground will be still much better broken and prepared. In March these ridges are split, the ground is well harrowed, and laid as smooth as can be, and, if possible, it is ploughed again the same day, in order to sow. But in strong wet lands, the best way is to lay it around, and make deep furrows to receive the water.

Some at the time of two-fallowing in June, make the land very fine, and sow it with
turneps

turneps, which they feed sheep with in the winter; and in March they plough it up, and order it as before: but others, who take this method of sowing turneps, give it only one ploughing in March, just before they sow.

Those who sow barley upon an erſh, after wheat, plough up the wheat stubble in as dry weather as they can, as soon as the time of sowing wheat is over, which is generally about the beginning of October, and lay three ridges into one, if they have dung to spread upon it: but if they have not, they plough it in small ridges, as before directed, that it may be the drier, and be the better mellowed by the frost: they then plough it up again in March, and order it as before. Some farmers injudiciously sow their barley after oats, in which case, neither of these three ploughings ought by any means to be neglected; and the land will be in much better order if the first of them be given in October: or, if the harvest be early, the weather dry, and the husbandman can possibly find time to do it, he will improve his ground still more, by ploughing it up before he sows his wheat, just as harvest is in: this will be half as good as a summer's fallow. But all years will not admit of this practice.

After the barley is sown and harrowed in the ground it should be rolled after the first shower.

of rain, to break the clods and lay the earth smooth ; which will render it better to mow the barley, and also cause the earth to be closer to the roots of the corn, which will be of great service to it in dry weather.

And also when the barley has been up three weeks or a month, it will be a very good method to roll it over with a weighty roller, which will again press the earth to the roots of the corn, and thereby prevent the sun and air from penetrating the ground, which will be of singular service in dry seasons ; and this rolling of it before it stalks, will cause it to tiller out into a greater number of stalks ; so that if the plants should be thin, this will cause them to spread so as to fill the ground, and likewise strength the stalks.

The land which lies both very dry and healthy, and in which both mellowness and lightness are joined to a proper strength of soil, is that which produces the best body, and thinnest rinded barley ; qualities which always recommend this grain, especially to the maltsters. Such generally is the barley of the growth of the hilly countries. But poverty of soil is no means requisite in land, in order to its producing a plump and thin rinded barley : though it is allowed, that poor land which lies dry and warm, will bear better corn of this kind, than rich land in a cold and wet situation : for barley does not stand so
much

much in need of strength in the land, as of the healthiness and warmth of the soil; though both are best where they can be had.

With regard to the choice of feed-barley, it is necessary to observe, that the best grain for sowing is that which is not blackish at the tail, nor has a deep redness, but is of a pale lively colour, intermixed with a bright whitish cast, and if the rind be a little shrivelled, it will be so much the better; for that slight shrivelling occasioned by its having sweated in the mow, is a sure indication that its coat is thin. The husk of thick rind barley, being too stiff to shrink, will lie smooth and hollow, even when the inside flour has been shrunk from it.

The necessity of a change of feed from time to time, by sowing that of the growth of a different soil, is no where more evident than in the culture of this grain, which otherwise becomes coarser and coarser every year. But at all times in this, as well as in all other grain, the utmost care should be taken that the seed be full bodied.

If the corn grows too rank as it is sometimes thought to do in a wet spring, mowing is then much better than feeding it; because the scythe takes off only the rank tops, but the sheep feed upon all indifferently; nor should they even in any case be left upon it

too long, because being particularly fond of the sweet end of the stalk next the root, they will bite so close as to injure the growth of the plant.

Barley is ripe when the red roan, as the farmers call it, meaning a reddish colour on the ear, is gone off, when the ears droop, and fall, as it were, double against the straw, and the stalks have lost their verdure. If it be full of weeds it must lie in the swarth till they are dry. It is not apt to shed; but in wet weather it will be apt to sprout or grow musty; and therefore every fair day after rain it should be shook up and turned; and when it is tolerably dry, let it made up into cocks; but be sure never to house it till thoroughly dry, lest it mow burn, which will make it malt worse than if it had spired in the field. The common produce of barley is two or three quarters upon an acre.



Of the Management of Wheat.

AS a crop of wheat is in general, the principal riches of farmers whose farms consist of arable land, I shall be very full in describing the best method yet practised with success, for cultivating this useful species of grain ; and in order to this, shall begin with the method of preparing the soil by ploughing, harrowing and rolling.

Ploughing increases the food of plants, by opening the soil to receive the vegetable food from the air ; and by enlarging the surface, and thereby exposing a greater quantity of the soil to its influence,

It enlarges the pasture of plants, by opening the soil, if too solid, and making it firm if too light. And prepares the vegetable food for entering the root of plants, by reducing vegetables to a state of corruption, and dissolving oils.

It

It may be said, that ploughing is one of the most important operations in agriculture, and that the greatest care is to be taken in the performance of it.

Though ploughing in general serves all the purposes mentioned, yet commonly one of them is chiefly in view ; and according to the design in view the work is to be performed.

When the design of ploughing is to encrease the food of plants, the surface cannot be made too uneven ; for the more uneven the surface is made, the greater quantity of the soil is exposed to the influence of the air, and the greater quantity of the food procured.

When the design of ploughing is to enlarge the pasture of plants, that kind is best that goes deepest, provided the soil allows) and most effectually breaks the mould ; for the deeper the plough goes, the greater quantity of soil is employed in vegetation ; and the more effectually the mould is broken, the larger is the pasture in the same quantity.

When the design of ploughing is to destroy root-weeds, the surface cannot be left too rough, nor the earth of the furrow raised in too large pieces ; for the rougher that the surface is, and the larger the pieces of earth raised, the drought has the easier access, and

more

more effectually operates in the destruction of the roots.

When the design of ploughing is to destroy seed-weeds, the surface cannot be made too smooth, nor the mould too much broken; for the smoother that the surface is made, and more effectually that the mould is broken, the seeds are the more exposed to the influence of the air, the sap better preserved, and their vegetation better preserved.

When the design of ploughing is to remove wetness, the land must be laid up in high and narrow ridges; for the greater number that there are of furrows, there are the greater number of drains; and the higher that the ridges are, the more easily the water finds its way to the furrows.

In ploughing there are some general rules to be observed, whatever is the design of it. Thus land is never to be ploughed when it is wet. When land is ploughed wet, the design of ploughing, whatever it may be, is frustrated; and this holds true in every kind of soil.

When stiff soil is ploughed wet, by drying too suddenly, it becomes hard, that it can receive no benefit from the air, and the pasture in it is entirely shut up; root weeds strike root again before the drought reaches them; and if there are any seed-weeds, the surface
crusts

crusts so soon, that they are prevented from vegetating.

When light soil is ploughed wet, though it may receive some benefit by exposing a larger surface to the influence of the air, yet its pores, being full of water, will prevent its pasture from being enlarged; that the root-weeds that are in it will be destroyed; they will rather flourish, by being translated into a new pasture.

The ordinary way of harrowing after seed is sown, is first along the ridges, then across, and then along again. If ridges are flat, they may be harrowed either along or across; and the work may be begun or ended either way. But if the ridges are steep, it is improper to begin by harrowing across, because thereby too much of the seed will be drawn into the furrows. If the ridges are very steep, for the same reason, it is improper to harrow across at all. For another reason it is thought improper to harrow across ridges when the land has been ploughed immediately out of lea or grass. In ploughing this kind of land, the sward is for the most part turned over whole; so that when the harrow goes across, instead of tearing the sward, it is apt to turn it back into the furrow from whence it was taken. When ridges are gathered or cast, this will probably happen. In casting, the earths of the furrows on one side of the ridge are turned

ed towards the crown; and, in gathering the earths of the furrows on both sides are turned the same way; and therefore the harrows, when drawn from the crown to the furrow, are apt to take hold of the unbroken sward, and turn it back. But this does not so readily happen when the ridge is cloven. Because in cleaving, the earths of the furrows on both sides of the ridge being turned from the crown, the harrows, in going up from furrow, are not in such danger of turning them back. In ploughing lea, the earths of the furrows are sometimes placed as exactly as possible upon their edge, that so they may be the more easily torn by the harrows. When these are turned to the crown, they do not support each other; and are therefore easily turned back by the harrow, in going from the crowns to the furrows: but when the earths are turned to the furrows, so they support each other by their weight; and therefore are not so easily turned back by the harrows in going up from the furrows to the crowns

Rolling of land is practised with success, both on land lying in grass and on land in tillage. It is of advantage to land in grass, by pressing down mole-hills and mole runs. It's said, that it also destroys fog.

When land is laid down in grass for hay, rolling is of use in smoothing the surface; and when laid down in grass for pasture, it makes

makes the grass stool, or tiller, and grow thicker.

There is a kind of land, which, when clover is sown upon it, throws out the young plants after frost. Rolling, in the beginning of winter, and immediately after the frost is gone, it is said, will, in some measure, prevent this. The first rolling prevents the frost from penetrating so deep, as otherwise it would do; and the second makes the land firm, after having been loosed by the change from frost to open weather.

Rolling may be used with advantage upon land in tillage. When the land is naturally stiff, and may be reduced by the harrow, rolling is very improper; for it makes this kind of land still firmer than the harrow does. But if the land rises in clods, which the harrow does not reduce, rolling is very proper; for it smooths the surface, and breaks the clods, more effectually than harrowing.

When the land is light and spungy, the roller should always be applied after seed is sown, for it is scarcely possible to make the land too firm.

But however all the operations of ploughing harrowing, and rolling are performed, something will be still wanting to promote vegetation, and this want is effectually supplied by certain substances called manures. To apply these substances in such a manner, as most effectually

tually to promote vegetation, it is of importance to know their natures, and the ways in which they operate. This is the more necessary, as, without it, we cannot know how to apply them in the most proper manner to the different soil.

Manures are very different in their natures. Some of them operate in all the ways mentioned ; and there are none of them that do not operate in more ways than one.

The manures generally procured are dung, marles, ashes, foot, sea weed, shells, sown vegetables, and water.

Dung promotes vegetation, by communicating to the soil a power of attracting the vegetable food from the air. The earth which it contains, is of the absorbent kind, and attracts all the other principles of the vegetable food ; and the salts which it contains and produces, attract oils.

It likewise promotes vegetation, by preparing the vegetable food for the nourishment of plants.

It is a custom in some places, to fold sheep and cattle for the sake of their dung ; which in this way, is used without any mixture. Some writers on husbandry give particular directions how to do this in the most advantageous manner. But it is needless to consider these. The farmer must consider the advantage of his sheep and cattle, and not the ad-

vantage of the land by the dung ; and therefore must fold them in the most convenient manner. A score of sheep, with the best management in folding, will not produce much more than ten shillings worth of dung, in the season, above the expence of folding ; a sum soon lost by an injudicious management of them.

Dung is most commonly mixed with vegetables, and allowed to lie for some time before it is used.

Straw is thrown before the cattle, and this is carried out along with the dung, and thrown upon the dunghill. On the dunghill is also thrown all the straw that is left after serving other purposes, and all the refuse of vegetables and animals, used in the farmer's family.

Dung exposed to the sun and wind, and washed by rain, loses its vegetable food ; it ought, therefore, to be ploughed in as soon as possible, after it has laid upon land. Some persons assert, that they have found from experience, that dung is nothing worse, though it lies a considerable time upon land, in dry weather, before it is ploughed in. This, if true, is contrary to what has been supposed, that the vegetable food is exhaled by the sun, and carried off by the wind. It is probable, that, after dung is spread upon land, its fermentation ceases, and the salts and oils remaining

maining in it may become fixed, and may continue so till a new fermentation is raised by mixing the dung with the soil ; and that, by attracting acids from the air, more salts may be formed. By this its effects will be more sudden and violent, but sooner over.

It may be proper also to observe, that as the juices contained in the dung are washed downwards by the rain, it should be ploughed in with a very shallow furrow ; excepting when the dung is not sufficiently rotten. In this case it requires a deep furrow to cover it.

The better that dung is mixed with soil, the purposes of vegetation are the better answered ; all parts of the soil receive equal benefit, the vegetable food is equally distributed, and in all parts the fermentation equally promoted. When dung then is laid on land, it ought to be spread as equally as possible. This likewise prevents the breeding of vermin, which happens in some soils, when the dung is left in too large pieces.

Lime enlarges the vegetable pasture. By its weight it penetrates the soil ; and, by its fermentation with acids, it separates its particles.

This operation of lime is obvious to every person that views with attention any land that is thoroughly limed. It appears soft and mellow, and obviously in a state of fermentation.

Lime dissolves the vegetable food, and fits it for entering the roots of plants. It dissolves all the animal and vegetable substances which it meets with in the soil, and converts them to vegetable food. We find from experience that lime clears land of root weeds. Root weeds, when torn up by the plough, have their growth checked, and are for some time in a languishing condition : if lime is applied to their roots while in this situation, by its dissolving power it is apt to destroy them.

When lime is intended for a manure, a small quantity applied at a time is sufficient. It is probable, that it requires only a small quantity of lime to impregnate a large quantity of earth, and to communicate to it an absorbent quality, in as high a degree as it is capable of receiving : and it is certain, that it is in proportion to the absorbent quality which it communicates that the soil is enriched by it. This is not merely conjecture. It is certain that a small quantity of lime will impregnate a large quantity of water, and communicate to it all its virtues, and these in as high a degree too as it is capable of receiving : it is not improbable, that it may operate in the same manner upon earth. If a small quantity of lime communicates an absorbent quality to a large quantity of earth, but has not such influence in dissolving vegetable

getable substances, or in producing fermentation, it follows, that the smaller the quantity is, which is applied, it will operate the more as a manure; and the greater the quantity applied it will operate the more as a stimulus.

There are a variety of marles, which are commonly reduced to three sorts: the clay, the stone, and the shell.

The clay and stone marles are of the same nature; the shell marle is very different from both. This makes it necessary to treat of them separately.

Marle of the stone and clay kinds promotes vegetation in a surprising manner. It is probable, however, that it contains in itself few of the principles of which the vegetable food is compounded. Plants are not able to find their food in it. When in a bed below the surface, it resists the entrance of water, like till or clay. When near the surface, and turned up by the great quantities, the soil is little better than till, almost quite barren.

The only difference between them is this: the clay marle is sooner dissolved than the stone marle; and commonly has a stronger power of destroying acids, and producing salts. Dr. Home says, that the clay marle, which he tried, destroyed a third more of acids than the stone marle.

These marles seem to have much the same qualities with lime ; and, therefore, must operate in the same manner.

As marle operates in the same manner as lime, it follows likewise, that limed land exhausted by crops, can receive little benefit from the application of marle ; and that marled land, exhausted by crops, can receive little benefit from the application of lime, as it exhausts the vegetable food, the proper nature after it is dug, which contains this food in the greatest plenty.

When barren land is to be improved, the marle should be laid on in large quantities : but when land is in good order, the applying a fifth or sixth part of the quantity commonly used, once in six or seven years, may have very good effects.

Ashes contain a large proportion of salt ; they attract acids more violently than any other thing as yet known, but soon lose their virtue.

The effects of ashes will then be of the same kind with lime. But as ashes contain salt, their operation will be more sudden ; as they attract acids with greater violence, and sooner lose their virtue, their operation will be more violent, and sooner over. This is confirmed by experience. The first crop after land is manured with ashes is commonly
very

very luxuriant, and the second crop exhausts almost the whole of their virtues.

As the effects of ashes are sudden and violent, they should be applied in very small quantities; and as they operate in the same way with lime, they should not be applied to land exhausted by lime or marle; and should not be followed by these, nor repeated.

Turf is composed chiefly of vegetables; that which remains then after burning, must be of the same nature. To these the fertility communicated to the soil is chiefly owing. It is found from experience, that in proportion to the number of roots contained in the turf the burning turns out to advantage; and therefore land, with a tough sward of grass upon it, is recommended as the kind most proper for being improved in this manner.

The heat which part of the soil receives from burning the heaps of turf is supposed to contribute to its fertility: but this can have little influence except to destroy any seeds or roots of weeds that may be in the land.

In burning the turf, care must be taken to cover the heaps in such a manner as to prevent the fire from breaking out into flame. Where this happens, it is observed, that the ashes lose part of their virtue, and that the parts of the field manured by them are not so much enriched as the other parts are by the heaps of turf that are burned without flame.

It is natural to think, that the earth of the turf, when properly piled up, will retain the oils of the vegetables, and prevent them from ascending into the air in smoke and flame.

To prevent burnt land from being exhausted, one crop only, or two at most, should be taken, and then turned into grass for pasture. If a little dung is added after the first crop, its fertility will be the longer preserved.

Soot cannot be procured in such large quantities as to be used by itself, excepting in the neighbourhood of large cities; it is needless therefore to insist much upon it.

It contains oil, salt, and earth. These, it seems are compounded in such a manner as to be ready to be conveyed into the roots of plants by water. For the effects of soot, when spread upon the surface, are discovered immediately after the first rain. It promotes vegetation in the same manner as dung, or shell marle. It increases the food of plants by the ingredients of the vegetable food which it contains. It enlarges the pasture of plants, enables the soil to attract the vegetable food from the air, and prepares it for entering the roots of plants by the salt that it contains, which is of the alkaline kind, attracts and ferments with acids, and attracts and dissolves oils.

As it contains great plenty of vegetable food, and as its effects are sudden, it must be laid on in very small quantities. Sowing it the spring on winter corn or grass, seems to be the most proper way of using it.

When the quantity laid on is but small, and its effects sudden, it cannot be supposed to last long. Its virtues are commonly exhausted by one crop.

When its effects are over, the soil is left in the same situation as before it was laid on, nor exhausted of its vegetable food, as by lime or ashes; and therefore it may be repeated; or it may be followed by these manures, as it is very proper to be applied to land that is exhausted by them.

All the plants that grow upon the rocks within reach of the sea are good manures. Those that grow upon the rocks that are almost always covered by the water, are the richest.

Some kinds of sea-weed are burnt for kelp. This, it is thought turns out to greater advantages than using them as manures.

They are of a soft pulpy nature, dissolve, and soon putrefy; and they contain oil, salt, and earth. They must promote vegetation therefore in the same manner as dung or soot.

Their effects are sooner over than those of dung mixed with vegetables from a dungill;
for

for they sooner dissolve and consequently sooner putrify.

They may be applied to soil in any situation, and are very proper for land that is exhausted by lime or ashes.

When their effects are over, the land is in no worse a situation than before they were applied, and any kind of manure may be applied after them.

The oftener they are applied, the land becomes the richer; for the earth of which they are compounded, is of the absorbent kind. The land near the shores, where these seaweeds are in great plenty, and have been so long used as manures, are among the richest in Scotland, and have been kept constantly in tillage.

In many places, near the sea shore, broken shells are found in beds. These are used as a manure.

They ferment with acids, and like other animal substances, contain oil, salt, and earth. The oil and salt are not in great quantities in proportion to the earth.

Their operation must be of the same kind with that of shell marle.

It is a practice in some places to sow turnip, buck-wheat, pease, &c. on land; and when grown up, to plough them down for manures.

These

These may be called vegetables in an entire state, to distinguish them from dung made of putrified vegetables; though no vegetable can be a manure till it is putrified.

Wheat should be sowed in autumn, and always when the ground is moist. In the downs of Hampshire, Wiltshire, and Dorsetshire, farmers begin to sow their wheat in August, if any rain has fallen, and even employ their people to sow one place while they reap another, if wet weather interrupts them in their harvest; for if the corn is not forward in autumn, so as to cover the ground before winter, it seldom does well on those high dry lands, especially if the ensuing spring prove likewise dry. In low strong lands, some husbandmen think they are in good season, if they get their wheat into the ground by the middle of November; nay, it sometimes is Christmas, or even later, before all their wheat is sown. But this late sown wheat, besides being apt to run too much to straw, especially if the spring be moist, is liable to be thrown out of the ground by frosts.

In general, all wheat succeeds best upon strong soils, especially if they have been well drained, so that the corn lies dry: but as some sorts of this grain thrive better in some soils than others, it might redound to the public welfare if more particular observations were judiciously made in regard to each kind,
than

than have hitherto been. The white egg-shell wheat is reckoned best for light lands, and to sow with rye for messin ; because it ripens soonest. It should also be the soonest in the ground, This species is much sown in Essex, upon their hazely brick earths, or loams ; as the red wheat, and the Poland bearded wheat also is there, and in Hertfordshire upon stiff yellow clays. The white Poland, or pole-river wheat has not a hollow straw, and therefore not so subject to lodge as other corn that has. This kind is particularly fit for lands where the crop is apt to run much to straw.

In Oxfordshire, they have a sort of wheat which they call long coned wheat, and reckoned the best for rank clays. Its straw not being hollow, it is the less liable to lodge, and farmers allow that it is the least apt to be mildewed, or be eaten by birds, from which last it is greatly guarded by its long rough awns ; but the flour of it is somewhat coarse. Their white kind of red eared wheat has a white ear and a red grain, and is a very good sort for clayey land. It yields a good crop, and seldom smuts.

In Staffordshire, they reckon the red Lammes or bearded wheat the best for cold lands or stiff clays.

In Berkshire is a wheat called *pendulum* wheat

wheat, from the hanging of its ear, much like the cone wheat.

In Northamptonshire, they have a sort of wheat with a white straw and reddish ear and grain; much commended for the plumpness and largeness of the grain, and the strength of the straw, which prevents its being subject to lodge; & not apt to be eat by birds. They have also a red eared bearded wheat, and a sort of pollard or duck-bill wheat, as it is called, known in Suffex by the name of fuller's wheat, which has so close and thick a husk, that the birds never injure it.

The best time for sowing wheat is about the beginning of September, especially if any rain has fallen; a circumstance so essential, that if the earth be very dry, the farmer had better stay till friendly showers have moistened his soil, than put his corn in ground where it will not grow before it has been wet, let the time be ever so long. Mr. Mortimer says he has known wheat to be so mustied and spoiled by laying long in the ground before rain came, that it has never grown at all: to which he adds, that he has likewise seen very good crops of wheat from seed sown in July. At all events, the husbandman should take care to have his wheat sowing finished by the middle of October. Whoever neglect this, shews in so doing, a want of proper economy

onomy in his affairs, and will have cause to repent the delay.

Early sowings require less seed than late ones, because the plants then rise better, and acquire strength to resist the winter's cold. More seed should always be allowed for poor land than for rich, because a greater number of plants will perish on the former. Rich lands, sowed early, require the least seed of any.

Another circumstance which the husbandmen should carefully attend to in sowing, is that his estimate of seed be formed, not from the capacity of any particular measure, but from the number of grains which the measure will contain; because the grains of some growths of wheat are much larger than those from off other lands, though not of the same species, and perhaps equally good. By not considering this, the ground will of course frequently be sown too thick, or too thin: though I believe farmers are seldom apt to run into this last extreme. That they too often commit the former error, so manifestly contrary to their interest in every respect, is demonstrated by reason, and by daily experience:---but neither of these is sufficient to make them deviate from the beaten tract. Instead of the usual allowance of three bushels of seed wheat to an acre of land, repeated trials have shewn that half that quantity is generally

nerally more than sufficient: consequently a great deal of corn is actually thrown away; for the expence of purchasing seed, which most skilful husbandmen do, at least every other year, amounts to a considerable article in large farms, and in a whole country, merits the attention of the public, especially in scarce years.

More seed is commonly sowed upon new broke up ground, than upon that which has been longer in tillage. From half an inch to three inches is the usual depth at which wheat is planted, according to the nature of the soil; the stiffest lands requiring the shallowest sowing, as was before observed. The general custom is, to sow it under furrow, which is certainly most adviseable if the soil be shallow, to prevent the plants being thrown out by the winter's frosts, or their roots being left bare by the drying winds in the spring. Some sow in broad cast, either with a single cast, or a double bout, harrowing once between; after which the ground is again harrowed several times, till the seed is well covered. However, a great deal of it will become the prey of birds, in this manner of sowing. On the other hand, in planting the corn deep there is the greater danger of its being eaten off by the worms between the grain and the blade.

Great care should be taken to guard against the rooks just at the time when the wheat is shooting up. These mischievous birds perceive its sprouting much sooner than the farmer can, and are led by the shoot to pick it up. They must therefore be carefully kept off the ground for a week or ten days at this season; for at the end of that time the blade will be grown up, and the grain so exhausted of its substance, that they will not give themselves any trouble about stealing it. They never molest the wheat which is sown about Michaelmas; because so much grain of the late harvest then lies scattered about the fields, that they find it easier to pick up that, than to search for corn under ground, in the new-sown lands.

No part of husbandry requires the farmer's attention more, than keeping his land free from weeds. The common method of weeding is very absurd: for in that practice the weeds are to grow till the wheat begins to ear, and they are in flower; by which means, the ground being covered by the corn, all the low weeds are hid, left to ripen, and scatter their seeds: only the tall weeds are taken out; and if the people employed are not careful, many of these will escape them, by being so intermixed with the stalks of the wheat, as not instantly to be distinguished. At the same time great numbers of the plants of
wheat

wheat broken and and trod under foot by the weeders.

To obviate these inconveniences, Mr. Millar recommends the methods now practised by good kitchen gardeners, who clear their ground with a small kind of hoe, which, if used among the wheat early in the spring, before the ground is covered by the blades of corn, will effectually eradicate all the weeds, especially if this work be done in dry weather; because, being small, they then soon wither and die. If the ground happens to be very full of weeds, it may be necessary to go over it a second time, about a fortnight after the first, to cut up those which may have been too small to be noticed. By this means the corn will be kept clean, freed from robbers which would deprive it of due nourishment, and there will not be time for new weeds to grow so as afterwards to do it any great prejudice: for the ground will be so much shaded by the corn, that the weeds will thereby be kept down, in such manner as not to ripen their seeds before harvest.

If, at the time of this operation, some of the plants are cut up where they grow too close, the rest will certainly be greatly benefited thereby.

Wheat is ripe when its straw is turned yellow, its ears hang, no greenness appears in the middle of them, and the grain is hard

when bitten. From four to five quarters is reckoned a good crop : but some would hardly credit how much beyond this the produce of good ground, thoroughly well cultivated, may be increased.

Both wheat and rye may be cut somewhat before they are thoroughly ripe, especially if they be lodged ; for if the straw be broken, it will no longer convey any nourishment to the grain, because the grain will harden afterwards in the sheaf ; whereas, if it be let stand till it is too ripe, it will shed greatly in cutting, binding, and carrying home. To prevent this inconvenience, tie it in the evening, and carry it off early the next morning. And indeed it must be allowed, that very great disadvantages necessarily attend the letting of some sorts of corn stand till their grains have acquired their utmost maturity. Both the chaff and the fodder are the worse for it ; and if such ripe corn takes wet, the increase in malt is lost, if it be barley, it having already spent itself ; and if be wheat, the quality of the flour is greatly impaired, and the quantity considerably lessened. But if corn be cut greenish, it will bear a pretty deal of wet without damage ; for it will not imbibe the water like full ripe corn, but only take in so much as to be kindly fed thereby. Again, if any sort of corn be blighted, the sooner it is cut down, though but half ripe, the better it

will be ; for nourishment can no longer be conveyed to it by the straw ; but it will be fed by lying in the ear. The straw would become more and more brittle, by standing till the corn is ripe ; and the grain comes the clearer from the husk, when threshed, if this blighted sort be cut early.

One man, with a binder, may reap an acre of wheat, and somewhat more of rye, in a day, if the corn stand well ; he will also clear about an acre of peas, vetches, &c. in the same space of time.

The two usual ways of cutting corn, are either with the scythe, or with the sickle. The former is commonly used for oats and barley, or sometimes, for very thin, short wheat, and the sickle is generally appropriated to the reaping of tall and thick wheat and rye. The scythe dispatches so much more work than the sickle, that the difference of expence between reaping an acre, or mowing it, is nearly in the proportion of five to two.

It is a well known maxim that wheat should be left for some days in the field, after it is cut, before it is innded : this, the farmers think, and not without reason, improves its quality ; the dews plump the kernels, and the sun brings it to proper and perfect state of maturity.

These then are the benefits that result from leaving the sheaves for some time abroad ;
but

but it is necessary the weather should be fine, or great losses are often the consequence of this practice.

Sometimes, when the farmer least expects it, the weather sets in foul, and it rains for several weeks successively : it is then very difficult to preserve the wheat from being greatly damaged, notwithstanding the contrivances that have been thought of for this purpose.

Some shock their sheaves, setting them up in traves of six sheaves of a side, and two to cap them ; but this is a very dangerous method, and never, to be practised after much rain has fallen : if the sheaves were dry when the traves were set up, from an expectation of its raining, it is great service ; but if the sheaves are first suffered to be wet, ten to one but the corn sweats, sprouts and rots, by being close confined from the action of the air.

After all, I am apt to think that it is full as well not to cap the shocks ; for if the rain is not very heavy and constant indeed, the ears, provided they do not touch the ground, will dry nearly as fast as they are wetted.

In Middlesex, Kent, and some parts of Essex they generally bind their wheat as they reap ; but then it must be supposed that their crops are, for the most part, pretty clear from green weeds, which would otherwise cause the sheaves to sweat violently in the mow, and greatly damage to the corn.

When

When a farmer is so unfortunate as to have his wheat sheaves thoroughly wetted, if fine weather ensues, I would by all means advise him to unbind them, and afterwards spread them out to be dried by the sun. This simple method will often prevent great losses, and the wheat may at last be got in in tolerable order.

If the rain, however, should continue long, and there should be danger of the kernels growing, which by observation he may easily judge of, I would advise the thinking farmer instantly to carry it home wet as it is, and afterwards manage it as I shall direct from my own frequent experience.

When the waggon, or cart, comes home loaded with sheaves, let them be thrown promiscuously into the bay of the barn; and not regularly moved; for it is necessary they should lie hollow, that the air may get into the vacuities, and so prevent the sheaves from heating during the little time they are to continue in the situation above described.

Let our farmer next prepare some cutting-boxes, such as horse meat is cut in, in Kent, and some other counties. The number of these boxes should be according to the quantity of wheat he has wet; but three or four constantly kept going will do a great deal of work.

With

With these cutters let the ears be cut off from the wet sheaves; and when a sufficient quantity are collected from all the boxes, let them be put loosely up in sacks, and carried to a malt-kiln, there to be regularly and gradually dried; and when the first parcel is done, another is to succeed, and so on till the whole work is completed.

This method I can, from my own experience, recommend to our readers; and it is less expence than at first thought would be imagined. The heat of the kiln may be kept up higher than when malt is drying, as the chaff of the ear will prevent the kernel of the wheat from being damaged by the fire, unless the heat is very intense indeed; but it will, however, be proper to keep the ears gently stirring, with a fork, or rake, during the time they are drying.

In this management the farmer will find advantages; and his wheat will, with a very inconsiderable additional expence, be nearly as good in a wet harvest, as if it was housed in ever so good order, in fine sun shining weather.

If, by chance, after you have cut off the ears from the sheaves, the weather should change, and become fine, you may often dry them without the assistance of the kiln, by spreading them thin on a large threshing-cloth, and turning them frequently with a wooden rake;

rake; and even, if by this method you should not entirely dry them, it will still bring them so forward that the kiln will easily complete the cure.

I must, however, before I conclude, caution the farmer, not to suffer the kiln to be much heated, unless the ears are kept constantly stirring during the time they are drying.





Of the Management of Oats.

OATS. Mr. Miller reckons four sorts, cultivated in England, viz. the white, the black, the brown or red, and the naked oat, in which, though supposed to be only accidental varieties, he has never observed any alteration where they have been cultivated separately for many years. Their principal difference is in the colour of their grain.

The white sort, which is most common at London, makes the whitest meal, and is chiefly cultivated where the inhabitants live near uplandous. The black oat is more common in the northern parts of England, and is esteemed a hearty feed for horses. Naked oats are cultivated in Derbyshire, Staffordshire, and Wiltshire, but are seldom seen in any of the counties near London, tho'

as they are a very hardy sort, and yield a good increase, they will be well worth propagating, especially in all strong lands. The straw of these oats is of a brownish red colour, as is also the grain, which is very full and heavy, and esteemed better food for horses than either of the other sorts. The naked oat is least common in the southern parts of England; but in the northern counties, in Scotland, and in Wales, it is pretty much cultivated, and is particularly esteemed, because its grain threshes clean out of the husk, and need not be carried to the mill, to be made into oat-meal or grist.

Oats are often sown after a crop of wheat, rye, or barley; in which practice the common method is to turn in the stubble, with one ploughing, about the beginning of February, and sow the seed with a broad-cast at twice, harrowing it in, once after the first sowing, and five or six times after the second, observing to draw the harrow once or twice across the furrows, to break the clods and cover the seeds; but at the other times to harrow in the same direction as the furrows, lest the stubble should be raised on the surface. But it would be better husbandry to plough in the stubble in autumn, that it may rot in winter, and to give the land another ploughing, and a good harrowing, just before the oats are sown. This will render the ground finer, and fit

to receive the grain, the increased produce of which will amply repay the extraordinary tillage of tillage.

When oats, as it frequently happens, are sown upon a lay, or on ground new broken up, after only one ploughing, which is given in January, when the earth is moist, to turn down the sward; the harrowing must be in the same direction as the furrows, or but very little across, for fear of raising the turf. But this again is bad husbandry: for the ground would be brought to a much bitter tilth for other grain, as a preparation for which this sowing is chiefly intended, by giving the sward time to rot before the oats are sown; because the roots of the grass will prevent those of the corn from striking downward.

Black oats delight in a moister soil than the white sort, and, being a hardier plant, may be sown a month earlier. The white, which prefer a dry land, and will do well on gravel and sand, are the best of all corn for ground subject to quick-grass or weeds, because it may be ploughed later for them, and they rise sooner, and top the weeds better than black oats. The weather cannot be too dry when white oats are sown; though the ground may then be moister for them than barley will endure; because this last, having a kinder coat, is sooner chilled by imbibing the wet, which may perhaps burst many of its vessels;

vessels ; whereas white oats, being protected by a double husk, better resisting the entering of the moisture. Mr. Lisle, who makes these remarks, adds, that, according to the best of his observations, white-oats require a rich feeding soil ; because their haulm, or straw, running to a great largeness, cannot be supported without good juices and moisture ; that white chalky ground, though in never so good heart, will be unfruitful with white oats ; and that a mixed mould, between white and red clay, of which there is a great deal in the hilly parts of Hampshire, is not feeding enough for them. The red and the white clays, when in good heart, carry moisture enough, and are very fit for this grain.

The common allowance of seed oats is four bushels to an acre ; but Mr. Miller rightly thinks three bushels more than enough : and the usual produce is about twenty-five bushels from an acre ; though he observes, that he has sometimes known more than 30 bushels reaped from that extent of ground.

When oats are about four inches high, intelligent husbandmen run a wooden roller over them, after a shower of rain has softened the clods, by the breaking of which in this manner, fresh earth is laid to the roots of the plants, their tillering is considerably increased, if they have not been sown too thick, and the surface of the field is smoothed ; so that the

mowers, at harvest, are able to cut close to the ground, as it is very fit they should, because oats seldom grow high. Both oats and barley should be carefully weeded.

Oats are ripe when the straw turns yellow, the grain becomes hard, and the chaff begins to open and shew the seed. When mowed, they generally let lie some time for the dew and rain to plump them, and make them thresh well, and, if weedy, to kill the weeds: but rain wet them much, they should be carried off as soon as they can be got tolerably dry again, or they will shed; for oats may be inned the wettest of any corn, if the weeds among them be but dead. Even in very harvests, when other grain is spoiled, this will receive little or no damage, the surface of its straw and ears being so smooth and compact as to turn off water, and of so dry a nature, that, though houses wet, they will not heat in the mow, or become mouldy, as other grains usually do. This is a vast advantage in northern climates, where the harvest is generally late, and the autumn wet.

The following letter from Mr. Lamb, on the best method of cultivating black oats, and recommending more frequent ploughings than are usually afforded them, will, we are persuaded, be acceptable to our readers.

Gentlemen,

HAVING been for many years a practical farmer in the eastern part of the county of Essex, you will not, I hope, think me impertinent in troubling you on the culture of black oats, which I have very often with advantage sown. Most of my neighbours prefer the white Poland oat, which may, I own, in some circumstances of soil and situation, be best. I prefer the black oats because they are hardiest, for which reason they suit best with my convenience; for, as a considerable tract of the farm I occupy is light land, I am under a sort of necessity of sowing this soil early, or if a dry summer followed, I should have no return at harvest.

Few people allow more than one ploughing for a crop of oats; but such as follow this practice are very wrong-headed; for they may assure themselves, that no crop pays better for ploughing than oats; and it is on this account that I generally give my land designed for oats three tilths; whence I am mo-

rally certain arises the largeness of my crops, for I have seldom under five, oftener six, and very frequently seven quarters from an acre, throughout a field.

Your readers will not be surprised at my having good crops, when I observe, that I almost every year sow some oats on a fallow that has been well dunged; and this I aver to be good husbandry, as it abates the rankness of the soil, kills many of the weeds, and prepares the land in an excellent manner for a succeeding crop of sweet wheat; but I must observe, that I always clear my land of the stiff oat-stubble before I attempt to plough for the wheat.

I sow black oats the first week in February, by which time I have generally an opportunity of getting the land in proper order, for a light soil is soon wet, soon dry.

Let me mention once more to your readers, that it is a light soil, which is apt to burn a crop, that I sow my black oats so early as the beginning of February; for should any of them attempt to sow them so early in a moist, cold, stiff soil, and a hard frost should follow, the young blade would, in all probability, be killed.

I must also remark, that when I sow oats thus early, it is generally under furrow; yet I sometimes sow them broad coak, and plough them in.

The quantity of seed I, for the most part, use, is about three bushels, which I find to be enough; nay, I have sometimes from only two bushels had a good crop; but then I have been particularly careful and attentive to the goodness of the seed, without which precaution I should not, unless the season had been favourable indeed, have succeeded.

I have found it a very good way to sow first half my quantity of seed under furrow, and afterwards, sowing the remainder broad-cast, harrow it in; and this is often my practice when I sow the latter end of February, or the beginning of March.

When I sow oats after wheat, which however is not very frequently, I turn up the stubble as soon as I conveniently can after the harvest, and leave it rough through the winter. The first fine weather after Christmas, I lay it down smooth with the harrows, and immediately give it a cross ploughing.

As soon as February comes in, if it is not a hard frost, I make the land as fine as I possibly can by the harrows, raising a fine mould to the surface, which is to be the bed for the oats to lie in; for I sow my oats directly under furrow; after which I pass a moderate-fixed roller over the field, and then give it a slight scratch with a pair of light harrows.

This husbandry generally produces me a crop I have no reason to complain of.

My

My chief reason for troubling you with this letter is, to endeavour to persuade my brother farmers that they do not, in general, allow their oats a sufficient number of ploughings, one being the stated quantity.

If they would plough twice for this crop, they would receive more than twenty shillings an acre for their trouble; but if they would consult their own interests, and allow three ploughings, it would often make fifty pounds difference to them in a field of twenty acres: this they will, perhaps, think wonderful; but it is no less true.

The black oats require particularly to be sown early, especially if the farmer wishes to have them of a fine glossy ebony colour, and that the crop should corn well; for if they are sown late, and wet weather follows soon after sowing, they will be apt to run all to straw; and if dry weather, and the soil is gravelly, it is a chance but it may be burnt up.

I have found by experience, that black oats will yield a very large crop after turneps; and this I believe is simply owing to their being sown in a fine tilth; for the mould cannot but be reduced to very small particles if a crop of turnips has been well husbanded, especially if it is in a light soil.

I am, &c.

J. LAMBE.

Of the Management of Rye.

RYE, a species of corn, greatly cultivated in the northern parts of England.

Mr. Miller is of opinion that all the rye sown in England is the same species, though distinguished by farmers into two varieties of winter and spring rye, as he has not been able, by the most sedulous experience, to find difference.

The winter Rye, which has the largest grain, is what the generality of farmers cultivate. It is sown in autumn, or at the same time as wheat; and in many of our northern countries, as well as in Wales, they are often mixed and sown together; though as Mr. Miller rightly observes, this must be very bad husbandry, because the rye will ripen sooner than the wheat; so that if the latter be suffered to stand till fully ripe, the grain
of

of the former will shed; nor can this be practised where the people are not accustomed to eat rye-bread: for though some account it good when mixed, it is so very clammy that few who have been used to wheaten bread will ever relish it.

Rye is generally sown on poor, lime-stone, dry, gravelly, or sandy soils, where wheat will not thrive, and in such places it does very well. The ground should be dry when it is sown: for if much rain falls, even after the sowing, before the rye is come up, it often rots in the earth. It indeed rises in a much shorter time than wheat.

When sown upon light land, it ripens much earlier than a cold stiff ground, and by continuing to sow it in such a soil during two or three years, it will be forwarded so much as to ripen a month earlier than that which has been long raised upon strong cold ground. For this reason, those who are obliged to sow rye towards spring, generally provide themselves with this early seed. A little sprinkling of dung or mud, though it be but half the quantity commonly for other corn land, will if laid upon the rye ground, greatly advance the crop. The usual allowance is two bushels of seed to a statute acre, or, if it be new broken ground, or land subject to worms, about a peck more; and the produce commonly

monly, is about twenty bushels upon every acre.

The small rye may be sown in the spring, about the same time as oats, and usually ripens as soon as the other sort : but if the season prove wet, it is apt to run much to straw, and the grain is generally lighter than the other. The chief use of this sort is to re-sow lands where the autumnal crop has failed.

This corn is ripe when its straw turns yellow, its ear hangs, and its grain is hard. It is not very apt to shed ; and therefore, if it be weedy, though this ought never to be the case with any corn, it should be let lie upon the ground, or gavel, as some call it, a week or ten days after it is cut, if the weeds do not dry sooner, before it be bound up ; for otherwise those weeds will give in the barn, make the rye not thresh well, and render it musty. But as this grain will grow in the ear sooner than any other, if it be wet, particular care must be taken, especially if rain comes on, to turn it at least once in two or three days, and lay the ears upon the stubble, as high above the ground as can be. This will help to preserve it from hurtful moisture : but if it be cut in perfectly dry weather, and without weeds, it may be housed as it is reaped.

Rye, is very excellent for giving a good skin to horses, as it is loosening, and carries off foul humours, which hard exercise and
bad

bad provender may have left in them. It is also a most excellent feed for geese. I cannot say the same with respect to hogs, for which animal it seems to me to be too-loosening; insomuch that I have given a great deal of it to them when put up to feed, both dry and boiled, without perceiving in their flesh.

Rye is very generally liked for bread by the people of countries in which it grows commonly, and who are therefore much used to it; insomuch, that many of them scruple not to prefer it to wheat, the bread of which presently grows dry. They are, however, numbers of persons, who, though used to it from their youth, can never relish it. Some object to the sourness of it when made with leaven, and others, to the natural sweetness of the grain, which is disagreeable, especially with the favouriness of flesh meat; and, indeed, I am myself of this number.

I agree intirely with Mr. Miller, that it must be very bad husbandry to sow wheat and rye together, as the latter will ripen much earlier than the former, and several obvious inconveniences ensue. They who like messin, may mix them to their mind when carried to the mill, without any inconvenience.

Many incidents may hinder the sowing of rye in autumn; the ground should, by all means, be dry, when it is sown, and heavy rains after it is sown may rot it in the ground before

before it come up: so that the sowing of spring-rye becomes an object well deserving our attention: and all the directions and cautions which can be given about it should be nicely attended to.

As dryness is essential to the success of rye, it seems adviseable to delay the sowing of spring-rye as long as can be, with any prospect of success, rather than not have both the ground dry for sowing, and the succeeding weather for some time after sowing likely to be fair; especially as rye soon rots in the ground, if wet.

The ground designed to be sown with rye in spring, should be laid in winter with high ridges, and have good drains to carry off the water, that it may be as dry as possible when sown.

Hot manures should be used, and particularly lime, which will bring on a speedy shooting. It was long a prevailing opinion, that lime was not a proper manure for the soil in which the lime-stone was found; but experience has shewn the vanity of this notion.

Rolling may be more necessary to settle the earth about the roots of plants of rye sown in spring than in autumn; for the winter frosts will have broke down the clods unto the roots of the autumn-sown rye, though indeed the rains may have partly washed that earth away.

A moderate sowing of foot, after the plants are come up and rolled, may be of great advantage. *Museum Rusticum*, vol. IV. page 225.

The same ingenious gentleman has obliged the world with the following observations on a course of crops; by which it appears that rye-land, is nearly, if not quite, as valuable as wheat-land.

The lands of Nether Dunsforth, in the west riding of this county, are in general, a strong clay, and bear good wheat. The lands at Helperby, a few miles distant, a good black loam, which bear good rye, but, on repeated trials, prove too light for wheat, as the most sensible farmers there affirm. Be this as it will, the lands let at the same prices in both places, viz. at ten shillings per acre; and we shall see that it may be as well afforded, according to the course of their crops, &c. which I learned only lately from two sensible farmers, one of them living at the former place, on an estate of my father's, and the other at the latter, and desirous to succeed his companion as tenant to my father.

At Helperby they have a crop of rye, then a crop of barley, then a crop of peas, then another crop of barley, and so round again; and they observe that the peas so mellow the ground, that their fourth crop is better than their second.

To bring these crops to a fair comparison, we must say, that the Dunsforthmen have five crops of wheat, and five of blendings, in fifteen years; and that the Helperby men have three crops of rye, three crops of peas, and six crops of barley, in the same space.

To estimate the real value of these crops, without too much nicety, we may suppose that the wheat is, one year with another, worth one shilling and six-pence per bushel more than the rye; and that there are twenty-five bushels of wheat and thirty of rye on an acre. We will take the medium price of wheat to be four shillings and six-pence, and of rye three shillings.

An acre's crop of wheat then	
would be	5 12 6
Ditto of rye	4 10 0
Difference	<hr/> 1 2 6

But as the straw of rye is known to be much more valuable, and of greater quantity, and the expence of manure and seed to be less, we may safely deduct	0 10 0
	<hr/>

So that the real difference of profit on one acre will be	0 12 6
---	--------

The crops of blendings and of peas may be reasonably reckoned as on a par.

The difference of profit then betwixt three crops of wheat and blendings on one side, and three crops of rye and peas on the other will be 17 6

We are now gentlemen to consider the difference between the two remaining crops of wheat and two additional crops of blendings on one side, and the six crops of barley on the other.

Supposing the charge of both sides to be the same, (and there will be no considerable difference) the two crops of wheat will be worth 11 5

A crop of blendings usually falls betwixt fifteen and twenty bushels to the acre, and the medium price is three shillings per bushel: the value of a crop then, at an average will be seventeen bushels and a half, at three shillings; that is two pounds twelve shillings and sixpence, and of two crops of an acre 5 5

A crop of barley is usually thirty two bushels to the acre at the place in question; and the medium price per quarter is one pound: the value therefore

fore of the corn of an acre of
barley is four pounds, or of six
crops

24 0 0

But the straw of barley is so valu-
able that it may be reckoned to
exceed the expence of reaping
by at least five shillings ; that is
for six crops

1 10 0

I did not enquire whether the men
of Helperby sow clover with
their fourth crop ; but they cer-
tainly may, and reap one good
crop in the fallow year, and
turn in all their stock for a fort-
night or three weeks to feed it
down, and have time enough
to plough in the roots of the
the clover, and the manure
made by the cattle which eat it,
and get their fallow into order ;
so that we cannot reckon less
profit hence than one pound
per acre : that is, for three
crops

3 0 0

Nay, when one considers, that rye
is, of choice, sown late in this
country, we may allow a second
crop of clover and feeding,
which cannot be worth less than
fifteen shillings per acre ; that
is, for three crops

5 0

The whole account then will stand
as follows.

For the wheat growers.

By balance of three crops of wheat against ditto of rye, and two of blendings against ditto of peas	1	17	6
By two crops of wheat	11	5	0
By ditto of blendings	5	5	0
	<hr/>		
Total	18	7	6

For the rye-growers.

By the corn of six crops of barley	24	0	0
By the straw	1	10	0
By clover	5	5	0
	<hr/>		
Total	30	15	0

Balance of the fifteen years in fa- vour of the latter	12	7	0
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That is, for one year on one acre, sixteen shillings and six-pence ; that is a profit more than the rent of the ground, and half as much again above the profit of the wheat-grower.

Some experienced people may think that I have thrown more advantage into the scale of the rye-growers than I ought ; yet, on the strictest review, I cannot think so ; but that on the contrary, I have reckoned their advantages too low. I am sure I am not partial, for I own a wheat crop my favourite
one

one (I have a natural dislike to rye bread) though I own the rye ground more advantageous to the farmer. Let us review my account.

Am I thought to deduct too much, when I take off ten shillings for the saving in seed, and gaining in straw, of rye? surely I ought not; for, as wheat is considerably larger than rye, fewer grains fill the bushel, consequently more should be allowed to an equal portion of land: and farmers who sow nine pecks of rye, sow twelve of wheat to the acre. Now the price of the former (according to the reasonable state above) is six shillings and nine pence; of the latter thirteen shillings and sixpence; consequently the saving, seven shillings and three pence. And whoever considers the great length and fineness of rye-straw than that of wheat must think two shillings and nine-pence per acre a very small allowance for it.

It is thought that more labour in ploughing attends the production of twelve crops than ten. Be it considered, rye land is lighter and therefore much easier ploughed than wheat land; and that in the course of this wheat husbandry, the fallow is not to be stirred as often as it would be to prepare it for the additional crops; and that, the oftener any ground is stirred, the more easily it is stirred; and that the crops of pease and clo-

ver mellow the ground, and make it more easily stirred for the sowing down with hard corn; also that it lies untirred every fourth year, from the sowing down of barley to the eating off the clover, about fifteen months. From all which considerations it seems most evident, that the same team and ploughman will, with more ease, work the same quantity of rye land, to produce its twelve crops of corn and the clover too, than they could wheat land to produce the ten crops.

Am I imagined to reckon the expences of seed and manure for two crops of wheat and two of blendings too high, when I put them on a par with those of six crops of barley? As this seems the most exceptionable, I will state the matter somewhat more particularly.

The seed for wheat is three bushels to an acre, which, at four shillings and six-pence, comes to thirteen shillings and six-pence; for two crops, to one pound seven shillings. The seed for blendings is four bushels to an acre, which, at three shillings the bushel, comes to twelve shillings per acre; for the two crops, to one pound four shillings. The seed for the four crops costs then two pounds eleven shillings.

Four bushels of barley sow an acre, and, at two shillings and six-pence per bushel, come to ten shilling per acre, or for the four crops to three pounds. The difference then

in the value of seed in the two methods, is only nine shillings. Now, let it be considered, that the ground is prepared, as to manure, by the rye-crop for the former barley crop, and by the crop of peas for the latter barley-crop, so that nothing need be charged on this account; whereas, to prepare the ground for the two crops of wheat, the farmer must be at great expence in manure, either in burning or (which is generally much worse) buying of lime, and lea'ing it, or at least in leading his own or bought dung; so that the nine shillings saved in the seed will go a very little way in this great expence. Besides, the clover so opens and mellows the ground, and the dung occasioned by eating of it, either at home or in the field, so enriches the soil, that much, if not all the expence of manure for a crop of rye is saved; and this allows the farmer to lay his manure, otherwise needless, unto his barley ground, and improves it for that crop, and the succeeding crops of clover and rye too; and on this account great deductions should be made from the expence of the three rye crops compared with the three of wheat at the head of this account; so that I am clearly of opinion, that, instead of there being any balance therein in favour of the wheat growers, it would fall considerably on the side of the rye growers.

In the last place, am I supposed to take the quantity of wheat on an acre too low? I answer, I take it from the course of the country where the comparison is made; and if greater crops are reaped elsewhere of wheat, so are there also of rye.

I was lately assured, by a farmer on the estate adjoining to this, that he has frequently reaped fifty-five bushels of rye off an acre, and his father has reaped as much or more off the land in this estate. I am fully persuaded it will be found, on enquiry, that one sixth in quantity, as I state it, is too little in favour of rye. A stock of good rye usually yields five pecks, or more, while a good stock of wheat, whose stalks are thicker, and bed less close, and make much less bands, seldom yields so much as a bushel; so that, if there be an equal number of stocks, as large as can be made, of each sort, on an acre, here will be one fifth, or six bushels in thirty more of rye than wheat, cæt. par. as philosophers speak. *Museum Rusticum*, vol. IV. pag. 245.

Method of stocking a farm of one hundred acres of pasture with cattle to sat for the markets. The common allowance for summer feed, is one beast to an acre and half; so to an hundred acres there must be sixty-six beasts, either steers, heifers or bullocks, to be bought in any time from the beginning of April to the end
of

of may, and not later. These cattle should be such as will answer the weight of seventy-five or eighty stone; each beast, when they are fat, at eight pounds each stone. The time allowed for fattening these cattle is four months, and the first price of them is about four pounds per beast,

While these are sold off, the ground will lye idle till October, and then you must stock it with small cattle, such as are brought from Scotland or Wales, about that time of the year, to each of these you must allow three acres for winter feed; besides now and then a little hay in hard weather, to keep them from licking themselves, which they apt. to do as soon as they rise from laire to their hurt, by bruising themselves, which makes them waste and grow lean. These will be fit for sale about February, and will then weigh about forty stone a piece. They are bought in about forty shillings a head; and the number for one hundred acres is thirty-three.

At the same time, to follow these small cattle, buy in sheep, to eat up the remaining part of the herbage, allowing two large wethers to each acre, which must be bought in very forward to fat; for if we take them from the fold, or the falloms, these pastures will give them the rot. In the purchase of these it is not pretended that our pasture should
fat

fat them, but only keep them till they will sell well at market, which will be the February following. Of these must be two hundred, to be bought in for about fourteen pounds per score.

You must observe, that all your pastures should be clear of all cattle, by the beginning of March or the middle of that month at farthest, according as the season is forwarder or latter; for if the cattle were left long enough to nip or bite the young spring of the grass, it would weaken and spoil the summer crop.



PART II.

The nature and cure of every disease incident to cattle, with the most approved receipts.

To find, in buying cattle, if they are sound.

VIEW them well; gripe them on the back, or withers behind the fore shoulders, and if they wince at gripping you have undoubted reason to suspect a malady: but be more curious, observe if they tremble and seem to shy much, if they do, you may depend that they are not sound. If you buy lean beasts for fattening, be careful that they are young; for if old they will prove of little profit. To know this, observe carefully if they are smooth, and lick themselves often, and if they want not their teeth; that their hides are thick and firm, shoulders and ribs broad; if the hair of their tail and pizzle be broken, they will not feed kindly, but rather dwindle than increase in flesh and fat.

How to know the age of cattle. The age of these animals is known by the teeth and horns.

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At

At the end of ten months they shed their fore teeth; and in three years all the incisive teeth are renewed. These teeth are at first equal, long and pretty white; but as the creatures advance in years, they wear, become unequal and black. They also shed their horns at the end of three years, and these also are replaced by other horns, which like the second teeth continue. The manner of the growth of these horns is not uniform, nor the shooting of them equal. The first year, that is fourth year of the creatures age, two small pointed horns make their appearance, neatly formed, smooth, and towards the head terminated by a kind of button. The following year this button moves from the head, being impelled by a horny cylinder, which lengthening in the same manner, is also terminated by another button and so on; for the horns continue growing as long as the creature lives. These buttons become annual joints, which are easily distinguished in the horn, and by which the age of the creature may be easily known; counting three years for the point of the horn, and one for each of the joints.

Of ordering cattle. The proper time for bringing the heifer to the bull is at about 3 years old, or rather upwards, at which time she is strong and lusty, and her growth will not be impeded, nor that of the calf, to rear for a good and profitable breed.

The

The season of the year is generally about May, or the beginning of June; the season being warm, will comfort her, and increase the calf within her; and from this time for eight years to come, she may take the bull with a prospect of increase; but in other cases till twelve; after which she will be good for little. The general symptoms of her wanting the bull may be known by her claws swelling, and a continual lowing, with many other signs, which country people cannot be ignorant of; as scenting, snuffing up of the wind, &c. In the choice of your bull let him be of a fine red, strong limb'd, and well proportioned, not exceeding six years old, but rather under.

If you find that the bull declines his suit and the heifer not very forward, you may provoke them by the following method.

Take the herb called hart's tail, which burn under their noses; or rub the cows sheath and bull's cods with nettles, which will cause a heat and provoke them presently to it. When she has twice or thrice served, drive her about for some time that she may retain the seed within her, keeping her as much as may be from briars and thorns: be careful that she drinks not of muddy water, keeping of her tolerably high; and be sure to house her in wet and boisterous weather, and you may expect a very fair calf in the kindly season.

Of ordering the calf. The calf being brought forth, feel in its mouth if there be any bladders or soreness to hinder its sucking, which is often the case, and may be perceived by its mumbling the teat; and seeming to suck with pain. If you find any impediment under its tongue, or in any part of the mouth, take your scissars and clip the place, rubbing it well with honey and salt; but if the blisters should appear in the roof of the mouth then use honey and allom. If the calf should happen to die, or be weakly, and you would willingly put a strange one in its place, let it not rest with her all night till better acquainted; for by winding of it she will discover the imposture: but when she has well licked it in the day time, she will in short time receive it kindly. At the end of two months or ten weeks at farthest 'tis necessary to wean, teaching it to feed on milk, oatmeal, dust of flower or bran; which is easily done by dabbling in it and putting your fingers in their mouths; new whey, is good for them wherein parsley roots have been boiled or infused; and by degrees you may bring them to eat sweet hay or grass, by giving them a little at a time; and if the weather prove warm you may turn them out in a pasture, giving them milk twice a day; and at the end of three months he will be capable of shifting for himself.

If

If your calf should prove lousy, which is often the case, and hinders him from thriving, rub hard against the hair, and anoint him with rusty bacon or waste salt butter, sprinkling him at the same time with ashes of fern; and it will not only kill them, but prevent his being visited for the future.

If a bull calf, geld him in the wane of the moon, but not in too cold a season; anoint the wound after castration with salt butter, and it will heal the sooner laying ashes of the vine over that mingled with litharge; and if they swell much anoint the part with linseed oil, and then tar, which will secure them from flies and putrefaction: be careful to put them where they cannot leap about; as it often occasions diseases, and sometimes death: in five or six days the parts will cement, and the danger be mostly over.

Young calves are apt to be attacked by insects, which disturb and torment them, and, at the same time, prevent their fattening. In order to preserve them from these insects, and even cure them when they are attacked, it will be proper to prepare an ointment of melted hogs-lard and quicksilver, well rubbed together in a marble or iron mortar. Spread this ointment upon a linen cloth, which wrap up in three folds, and stitch it for a collar to the calves. It will not only cure them, but also disperse the insects.

There is no better nourishment for young calves, than vetches soaked in water till they swell; but observe to steep no more than will serve them for once; because when they continue moist for any considerable time, they are apt to grow sour, and would then do them more harm than good.

The way to fatten cattle. Point out for their use an agreeable and pleasant pasture well watered; and as the season is, give them chaff, rapes, or grains, with the dustings of meal; sometimes chopped pease haulms, offal cabbage, turnip, or colewort leaves. If at any time you perceive their stomachs fail, and they do not feed kindly, boil colwort leaves in vinegar or stale beer grounds, drench them with it, and it will recover their appetites so as to feed roundly. Water them twice a day at the least in winter, but warm their water, lifting some bran in to soften it; and to make them healthy, bruise cummin and anniseeds, which boil in their water once in four or five days.

If a beast tire soon it portends a weakness and poverty of body, and will be followed by some mortal disease if not taken proper care of in due time.

To prevent which, and bring him to his appetite, take a small handful of salt and some white wine vinegar, with which rub mouth and tongue very well, then put
the

the remaining part down his throat and he will feed presently.

Sorbaiting, which commonly comes by travelling, and greatly impedes his journey, causing a great lameness and fretting; to cure which you must boil honey and hog's grease in white wine, till it come to a consistence equal with pap, lay it on his foot by way of poultice for three days, and it will assuage the pain.

The *foul* betwixt the claws of a beast comes by sand, stub or filth, which is not only very painful to them in the pasture, but a great hinderance to their travelling; to cure which, cast your beast and make fast his feet with proper implements, (which every breeder ought to keep by him) then with a sharp knife pare off what is dead, and rub the place very much to make it bleed, then take dry verdigrease and bruise it small, drying off the blood that shall issue from the wound, dip it in Hog's grease which bind on for one night, keeping it dry it will be well; but perchance a wart should grow betwixt the claws or on the heel, you must pare it with a knife letting it bleed very well, then take a hot iron, and sear it; after which take tar, yellow wax and butter melted together on a slow fire, lay it on with a tent of flax, binding it on with a linnen cloth, and it will be well forthwith.

Of beasts that cannot piss without pain. This disease

disease comes by too much heat, or by drinking sandy water, which gathering together stops the passage of the bladder, not unlike the gravel in a human body; it sometimes happens by bruised and clotted blood stopping the urinary passage as before observed: The best and most efficacious remedy for which is; take cummin, parsley, and water-rose seeds, or the herb itself, a small quantity, to which add about one ounce of mustard seed, steep them in white wine vinegar four hours at least, put a pint of white wine to the powders after they are steeped, and give to the beast milk warm; if this fail you, take of bay berries, butchers broom, fetwell, parsley, sow thistle, lettuce, penny-royal, and red nettles, bruise them in a little white wine vinegar, then strain them, adding a pint of white wine, with some anis and carraway seeds bruised, give it as before.

For the swelling foul. This disease proceeds from blood and watery rheum, which falling into the legs, causes a swelling sometimes in all four.

This disorder I have often cured myself, by casting him, and making his legs fast, after which with a sharp knife slit the skin an inch above the heel, directly under the footlock joint; be careful to cut right up and down, or you damage the sinews; this done, take some nettles, garlick and salt, bruise them together,

gether, and bind them on; but be sure to remove them within a night and a day, and they will mend apace.

For a scowring that stinks. A disease very common amongst cattle in general; proceeding sometimes from the blood, and sometimes from the distempers of the body, either by over heating or unwholesome fodder, which generally breeds laxativeness; the signs are evidently discovered in their continual scowring and stinking; the best method of cure is by bleeding them in the neck-vein, then take fenugrick, turmerick, long pepper, anniseeds, and liquorish, of each an equal quantity, add to these half a pound of allom, and a good quantity of charcoal, make all these into a powder; then take of rue, sage, wild mint, parsley, southernwood, wormwood, and hyssop, of each an equal quantity, chop and grind them as small as you can, putting at the same time a gill of white wine vinegar to them, roll all together and strain the herbs, after which add a little ale to keep them moist, and roll them again; then strain again, putting this juice with the former; take the whole contents with the abovementioned powder, and give it to the beast milk warm.

For the towering or hide bound in a beast. A poor beast low in flesh is generally visited with this disease, which is easily discovered by their hides growing fast to their back, their
eyes

eyes sinking in their sockets, and grinding of their teeth; neither will they chew their cud with willingness, but forsake their companions, and retire to a corner of the pasture; the speediest and best cure is to bleed him in the neck vein, then take a large handful of rue, hyssop, sage, fetherfue, southernwood, and rosemary; chop and grind these well together, taking a quart of strong ale or beer, to which put the herbs, and stir them well together; this done, strain them as well as possibly you can from the ale, adding thereto long pepper, fenugrick, turmerick, anniseeds, and liquorish powder; make the whole up together, and take about a tea cup full of fallad oil, which mix with the ale and juice of the herbs; give it the beast milk warm; if your beast is very weak and far spent, you must cut him in the dew-lap, and put in some bear's foot, or spear-grass mixed with salt and butter, and they will mend upon your hands.

Housing of beast. Be careful to keep their stalls dry and hard under foot, being well paved with stone sloaping, that the urine may run away, having proper conveniences for carrying it out of the house; it is necessary to have window holes or doors to let in the fresh air, at all times the season will admit of, by which means they will soon become fat.

For a dry cough or hoarseness in a beast. This hoarseness in either ox or cow should be carefully looked to, or in process of time it will

will grow to a worse disease, therefore it is necessary to prevent it in time, for which I prescribe the following medecine take the distill'd water of hyssop, or else a decoction of hyssop and mint, together with the juice of leeks, and administer it with the oil of olives; this is a certain and speedy cure; but if the cough or hoarseness be not over violent, you may give them tar with honey water, and it will certainly help them.

A purge for cattle. It is highly necessary to purge cattle in the spring before they go to grafs; for which purpose give them cinnamon or hartshorn, with common salt boiled together; you may also give them tar, butter, honey, sugar candy, and the powder of laurel leaves, either in balls or warm water, and after they have been at grafs about twenty days, bleed them in the neck vein, giving them at the same time a pint of warm ale: this is called the preservation of health for any cattle, that is ready to feed or go to business.

For the scab. Take some of his stale or urine, mix therewith some salt butter, white wine vinegar, fallad oil, and brimstone, blend these well together, and rubbing him therewith against the hair, he will mend speedily.

For the fever in a beast. A fever may be taken in the summer by over driving or hard labour; by drinking cold water when hot, which will cause a shaking on them at first, and produce

produce a fever, which is of dangerous consequence; the symptoms are an extreme heat, and their sweating upon the back to a great degree; the best way of managing them in this disorder, is to cut some fresh grass, giving them lettuce therein to cool their bodies, and the next morning let them blood in the neck vein, then give him the juice of purslain, blended with gum tragant, anniseeds, and the powder of damask roses, put these ingredients into a quart of strong ale, sweetning it with honey; give it him three mornings one after the other luke warm; keep warm the beast, and by God's assistance he will mend.

To keep an ox sound. The best method to keep an ox or cow sound, is to wash his mouth with his own stale, and white wine vinegar, once in about twelve days or so, which will bring a great deal of phlegm and water from his stomach; under which operation he will hang his ears and weep much for a short time; after which he will eat very heartily and thrive.

To make a cow take bull by milk. Your cow being in good case, and you would have her take bull, if you have not of your own you must borrow of your neighbour about a quart of milk from the cow that is bulling, which give to the former, letting her go with the bull, and in six or eight days she will be forward to receive the bull's embraces.

To breed milk in a cow. Your cow having a calf that is extremely weak and poor, or calved before her time, and not milk sufficient to support her charge, you must give her good store of malt, and milk warm. You may also give her every morning and evening a quart of ale made in a posset, from which be sure to take the curd. Put therein anniseeds, cummin, lettuce, and coriander seeds, all made into a powder; blend them well with the posset, and let them stand three hours; give unto the beast a potion of it some four or five days successively, and by often stroaking her teats, her milk will encrease exceedingly.

To kill worms in ox, cow, or calf. Pound savin and black soap, which blend with wort, and give it the beast, being careful to keep them full three hours afterwards without food.

To prevent flies from troubling cattle. Take a gallon of linseed oil, to which put a pound of bay berries, seeth them together, and anoint the beast therewith, and the flies shall not endure it, but shun him.

To recover a lost appetite in a beast. If a beast by hard labour has lost his appetite, and you would willingly recover it speedily, take six or more raw eggs (agreeable to the size of your beast) which beat up with honey, salt and vinegar. You may also give them hairhound dried and beaten into powder with their drink.

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But if the palate of the mouth should swell, launce it with a sharp knife, so as to let the blood and water emit, which rub with common salt, he will do well.

Cud or quid lost, how to recover it. It often happens that a beast will lose his quid by chance; and at other times by mourning or bad keep: to recover which, take stale leaven of rye bread and salt, which beat in a mortar with man's urine and baulm; make this into a large ball and administer it to the beast.

For the cramp in a beast. Rub the knees, legs and thighs, with salt and oil, and he shall become leapfome.

Lungs growing, a remedy. As the lungs of a beast are subject to extreme fixckneis, or stoppage, which is easily discovered in their coughing and straining, and by hanging out their tongues afterwards, to elevate which grievance you would do well to take a pint of tanners ooze, to which add a pint of new milk, one ounce of brown sugar candy, a quartern of fallad oil, and two spoonfuls of tar, which give to the beast at twice, and he will recover upon it.

For the withering of a cow. Take coleworts, mallows, maidenhair, mugwort, betony, and aristolochia; boil all these in water, which give to the beast moderately warm. You may also take aristolochia, myrrh and pepper, bruise them together, and administer them in white wine,

wine, or strong ale, milk warm, which will constrain her to cast her latter burthen or dead calf, and become whole.

To cure the swelling of a bull or ox's pizzle. Take holyock, houseleek, and a little plantain, stamp them together, and anoint twice a day; but if he be very fore you must cast him, and wash his sheath and pizzle with white wine vinegar very well: and if perchance there be any cancerous holes in the grievance, add thereto some burnt allum and wash therewith: after three or four times washing you will find a speedy amendment.

An excellent receipt for the swelling of an ox's cod. Anoint it with sweet seam at first three times a day; but should it fail, take wall earth, which dissolve in vinegar, and the dung of the animal, with which bathe him.

For the speed in the hinder parts. This disease is properly called the speed; as it either mendeth or ends in the space of three days, owing entirely to the foulness of blood, and is contagious amongst young cattle from one year to three. It will also affect them if neglected to be blooded. For the cure of which give them white wine and salt well mingled together; bleed them in the tail freely; then cast them, and with a sharp knife make an incision, full two inches long, in the inside part of the hinder legs, above the cavity of the gambriel: you must in this operation

be very careful to make your incision right up and down, lest you cut a sinue or vein. This done, make room with your finger, and in the orifice put in some salt, spear grass, butter, giving them inwardly a quart of ale; to which add some red sage, featherfear, and spurge, ground fine and made lukewarm. It would not be adviseable to drive them above twelve hours; for if they are taken care of while they can stand, you may nearly depend on the cure.

For the worm in the tail. This disease is soon perceived, as the hair will soon off where the worm lieth, and most certainly the joints are eaten asunder. To cure which, be careful to slit the skin on the under side, above the decayed joint, against the vein, which prick that it bleed freely; then take butter, salt and garlick, which bind on and it will mend; you may also slit their gums against every tooth, and they will grow fast.

A remedy for sore eyes, in bull, ox, cow or calf. Take mutton bones and burn them well pound 'em to powder, and searse them very well; then take burnt allom and tutty, with white sugarcandy and the juice of ivy, and it will help them that have a fleam which came by a chaff or stroke. Also take the marrow of a goose-wing, and it will help 'em; also take white salt and burn it in a dock, or wet cloth; then take the middle core of it, and mix it
with

with the juice of salandine, or drop juice of celandine or pimpernel into it.

There's also a disease on the eyes, coming by blood, and breedeth choler and blindness: sometimes the beast seeth a little, and sometimes not at all.

You must first cord 'em in the neck, and bleed 'em in the temples under the eyes: let 'em bleed very well, and put in some burnt allom and live honey mixed together every day, and they will mend for certain. *Approv'd.*

For the garget in the head. For the garget in the head, you must find it out by the swelling in their eyes and lips; their eyes will be swelled up, and the face and cheeks will be swelled: You must look into their mouths for blisters on their tongues; and if there be any, you must break them; but if the tongue be swelled, you must pull it forth, and look under it: if there be no blisters, then you must take your knife and slit it underneath the tongue an inch long, and let out the poison, and wash it with vinegar for the present, and within an an hour give three pennyworth of bowder of fenugreek, turmerik, long pepper, liquorice-powder, and anniseeds, in a quart of stronge ale or beer luke-warm. But to prevent this, bleed 'em well spring and fall; and when you do so, give to every beast some rue in a pint of ale or beer, though they be never

so well, milk warmed and they will do well.
Approv'd of myself.

For the garget in the tongue in the throat.

The disease comes of blood or sometimes of eating poisonous grass, as dogsbane, goose-foot, helmet-flowers, &c. all these are poison either to beast or swine.

You must first bleed them in the neck; and if swelled under the jaws against the throat-bowl, then you must pull forth the tongue and cut the vein that lies under it; cut the skin two inches long under the tongue, length way, to let out the blood and water; then wash the tongue with yinagar, salt, and burnt allom; for the outside that is swelled, you must slit the hide just against the swelling four fingers broad every way, and therein put a good handful of speargrass, salt, and butter, and stitch some of the hole up again; then take a lump of the bluest clay, as much as a mustard-ball, and boil it with old urine, the middle green bark of your elder, and a good handful of salt; let them boil a quarter of an hour or more, then put in a little reased bacon, boil them all together till they be thick, like pap, and then bathe the beast's face from the ears downwards, and stroak it downwards towards the slit as hot as you can endure, the hotter the better, so bathe the beast three times a day. When the swelling is abated,

take

take tar, fresh butter, and bees-wax, anoint the sore place. *Approv'd.*

And to prevent this disease, you must bleed 'em, and give 'em some rue in strong ale or beer, compounded together, giving it them milk-warm.

The murrain in a least. This disease comes several ways; first from the rankness of blood, or feeding; the corruption of the air, or the infection of other cattle. You may find this disease by their carriage, that is, they will foam at the mouth, and blow very thick and short; their heart and lights will beat very sore, and sometimes their face and chaps swell, and their eyes water.

First let all your beasts blood, both sick and sound, and give to the sick some rue, fetherfew, sage, hyssop, thyme, marjoram, marigolds, fennel, tansey, lavender, and spike, of every one a small handful; boil all the herbs in spring water, boil them from a gallon to a quart, and then strain the liquor forth; put thereto for every beast a pint of strong ale, and add to the juice and ale some long pepper, and green anniseeds, pease, bay-salt, treacle, and liquorice powder and butter. Pound all these spices, and put them to the juice of the herbs, and so give to the sick a full pint, but to the sound half a pint. *Approv'd.*

For madness in the head of a bull, ox, or cow. madness in the head, proceedeth from blood.

First

First cord them in the neck, let them blood in the temples, under the eyes, and in the ears: let them bleed very well, and give them fennugreek, turmerick, longpepper, and green anniseeds, all alike in portions, and but three pennyworth in the whole, with the juice of rue, or else very small grains, put all together; give it them in a quart of strong ale or beer milk-warm, but give one half of the thinnest in at their nostrils, the rest at their mouth.

This disease is easily found, for they will reel as they go, and set their head into their neck, or against a wall or a gate, and two men can hardly stir them.

For the garget in the maw. You may perceive it by their drooping and heaviness in their head, and hanging down of their head and ears, their heart will beat very fore, and many times they will be very costive in their body, and will not eat any thing, but sit continually.

Let them blood in the neck vein, and let bleed very well; then draw your cord and take rue, plantane, southernwood, wormwood, shepherd's-purse, smallage, colewort, if you can conveniently get them, of each half a handful; bruise them very small; take a handful of hen's dung, and lay it in steep in a pint of old wash eight hours, and then strain forth the hens-dung, and put the herbs and wash

wash together ; then put a quart of strong ale to the herbs and wash, and set them on the fire till one half is boiled away ; then strain them over again, and put in an ounce of treacle, one spoonful of the juice of garlick, and some anniseeds, together with some liquorice powder : blend all together, and give to the beast milk-warm ; it is special good for the murrain, or for any garget or long fought whatever. *Approved.*

For the yellows in the whole body. This disease is a forerunner of all diseases, and is the soonest found out ; for they will be yellow in the tale end, nay sometimes all over the body.

You must bleed them in the ears and in the tail very well, and put some salt in their ears, but rub them betwixt your hands when they are blooded, to make them bleed ; and then give two handfuls of salt down their throat dry over-night, and in the morning give them fenugreek, turmerick, long pepper, anniseeds and liquorice, but two-pence in all : the whole made into powder, and given in a quart of ale milk-warm, is very good for the overflowing of the gall. *Approved.*

A good receipt for the water murrain. This disease cometh of rankness of blood, and chiefly takes those that are young, betwixt one year old and three. This disease is easy to find out, for they swell on the back and both sides

sides the chine, and if they have not present help will die: the hide will be puft up to the shoulder-blade on both sides.

You must first let them blood in the neck, and give them some fenugreek, turmerick, long pepper, spikenard, all made into powder, and give it them in ale or beer, milk-warm. And for the swelling on the back you must take three handfuls of salt, a pint of spring-water, and a pint of white-wine vinegar, also a little allum, but pound it, and put them all together, beating it with a slice till it be white like milk; then bathe the swelled places very well, and it will dry up the rheum.

And for the preventing of this disease, bleeding is the best in time: also if they be swelled very much on the back, rowel them on both sides behind the shoulder blade against the heart, and put in some hair to keep the holes open, and they will amend presently.

For the rising in the body and swelling behind. You must look in their mouths, and behind, for blisters; if they have any, you must break them first, and then let them blood under the tail, and let them be raked with a little hand in their bodies behind for to break the blisters in the body, and give them a quart of churn-milk, some foot off the chimney, bole armoniack, a red onion, an egg, shell and all, mix them together and give it, and they will mend presently without fail, but walk them.

Of S H E E P.

How to make choice of good breeders.

IF opportunity will admit, your choice should be made from a county which naturally produces large sheep, as Hertfordshire, Lincolnshire, &c. owing to the nature of the soil, whereby you will profit by the largeness of the carcase, quantity of wool in the fleece, and the enormous size of the pelt.

For your ram, wherein is your great dependance in promoting a good and profitable breed: observe he be long in body, lofty in stature, large bones, deep bellyed, his cods covered with wool, and his horns large, the tips of which should bend from him, and above all, be careful that his palate be white, and not over moist; a ram with a black tongue is ever to be rejected, as his breed will be subject to diseases.

As for ewes, the deep bellyed white, and shining in their wool, are esteemed the best; to which add a fine long neck, with large udder and dugs, their horns smooth, and thin taper legs, with a large tail well covered with wool.

Having thus with judgment chosen your breed, the next thing in course is to procure pasture proper for the improvement of your flock, which should be of a red mellow soil, not too low or wet, which is generally good
sweet

sweet grass, if your ground be white, of a chalky nature, the grass is offensive to them, in so much that they will grow lean and pine away, as also a wet soil will subject them to the rot, which grievous malady will terminate in death.

An ewe is esteemed to have come to her full strength at two years old, at which age it is necessary to put them to the ram, as they will conceive strong and healthy lambs, and will continue to breed for full seven years; nevertheless, these of the first year are the best for stock, and the ram that serves the ewes, before the blossom must be kept (e're he be permitted to leap them) full six weeks in good pasture, so as to become strong and vigorous. Onions and knat grass, strewed amongst their pasture, will provoke the ewes to take the ram the kindlier; when you imagine the ewes have conceived, take the ram from them, and put them into a quiet pasture or warm house, agreeable to the season of the year, in this particular I would advise you to be very cautious, lest often leaping cause a miscarriage; the best time for covering, is generally held from May, to the middle of August, and the ordinary time of travel, is five months, or at most not more than 160 days, and oftentimes bring two at a time, nay, three or four is no great rarity.

They breed twice a year, at which time of
yeaning

yeaning they should be taken care of, lest colds or hurts make them bring forth with difficulty, to the great prejudice of the issue.

Of ordering lambs after cast, to make them grow lusty and strong. If they are backward to suck, squeeze the ewe's teat, and spirt milk in their mouths; then open their mouths and put 'em to the teat, which if they mumble or take unwillingly, anoint their lips with hogs lard and sweet butter, and it will make them more eager.

If the ewe chance to die, and their be no spare milch-ewe, it will be proper to suckle the lamb so left, through a horn; but otherwise it will be proper to shut up the ewe and lamb for a time, that they may be better acquainted, so the ewe will cherish and bring him up the better; when they grow strong and wanton, separate them with hurdles; and after ten days with soft string you may tye them to little stakes lest they hurt one another by pushing, or grow lean by their unruliness, ever severing the weak from the strong, when they are in the house, suckling them morning and evening, before the ewes go to pasture; and after their return so using them, till they wax strong; then feed them in the house with clover, sweet grass, and bran mix'd with flower; after which, if the weather be warm, turn them out with their dams into sweet pasture.

When you have weaned your lambs, which

if the weather be warm, may be done at seven weeks or two months ends, you must keep 'em well fed, lest they pine away, and become lean or sick, in moaning after their dams, and so lose their stomachs.

In gelding, open the cod, so conveniently that the stones may be brought forth; fasten the sinew or string it hangs by in a cleft stick, and sear it off with a convenient piece of hot iron, which will prevent bleeding, and hinder festering, if it be anointed with a little fresh butter or hogs lard, and closely put up, and kept from cold winds till the swelling, if it happens, be over. This is held best to be done in the wain of the moon, for then the blood and humours decrease, or are more contracted or limited than at other times.

If you would keep a ram lamb, make choice of one wherein you can perceive no blemish, but such a one as hath the marks I have mention'd in rams before, in *tongue*, *wool*, and other things which will make an excellent breeder.

And thus having given you an insight in o things necessary to be known relating to rams ewes, and lambs, 'tis requisite next to treat of their diseases, for their better preservation.

*Of diseases in rams, weathers, ewes, and lambs,
with their proper remedies.*

THESE creatures are by nature very tender, as all creatures bearing wool are, therefore special care must be had to preserve them, as they are subject to many diseases; in order thereto I have taken pains to lay down the choicest instructions, as to remedies suitable to their ailments: and the most dangerous distempers that afflict them are the scurvy, scab, cough, rot, red-water, &c.

These are occasioned either by extream pains in the head, or by a plague caused by infectious airs, and are mortal for the most part, if timely care and remedies be not applied; therefore when you perceive any of them in this manner afflicted, the safest way to prevent the spreading contagion, is to separate the infected from the sound, lest by your delay they infect the rest. Other distempers there are gotten by unwholsome feeding, eating bad herbs, drinking dirty or puddle water when hot, licking up mildews, poisonous insects, venomous spumes, cobwebs or glutinous dewes on the grass, and many other accidents. But to come more nearly to particulars.

To ease all manner of diseases in cattle. Take treacle one quarter of a pound, of hempseed

one handful, elder-leaves, ivy-leaves, and fetherfew, about a handful of each, loam a lump as big as a large egg, as much bay-salt, and a little foot; put them in man's urine, and stir all well together; make it warm and give to any beast three spoonfuls of it, and after that give them a little tar; it drives away and assuages any pain or disease in either head or body.

For the head-ach and pains in the head These pains, by some called the staggers, are caused by the intemperateness of the air, being either too hot or too cold; and sometimes colds taken upon heats, if not timely remedied, is apt to turn to a surfeit. The remedy for these is, to take six grains of alafætida, two spoonfuls of the juice of sage, in a quarter of a pint of red wine vinegar: give it when the sheep is fasting in a drenching-horn, or any other convenient thing, as hot as may be.

For the ague in sheep or lambs. Bleed them in the vein between the claws and keep them from drink twelve hours, then warm some water, and put half a pint of wine into it, with half an ounce of pepper, the flowers of comfrey, and leaves of wild tansey well stamped and infused, then strain it, and give it the sheep or lambs to drink in a close warm housing.

Loss of cud to restore. Mix powder of allom with clay, steep it in the urine of a man all night,

night, then take it out and make it up into little pellets, dry them in a fire shovel or oven, and force them down the sheep's throat six or seven times, at distinct hours, giving every time after them a spoonful of elder-vinegar, and the cud will be restored.

For rheums, coughs, or catarrhs. These commonly come by bad feeding or intemperateness of the air. To remedy them, take an ounce of powder of liquorice, as much of dill-seed and bayberries, a handful of the tops of vervaine; boil these when bruised in a pint of verjuice of cyder; strain it; and give it fasting to the sheep as hot as may be taken, and so in five mornings giving, the cure will be effected.

For St. Anthony's fire. This by many is called the wild fire, because it suddenly spreads, and is often dangerous to sheep. To remedy it, take wood foot two handfuls, of deers suet and turpentine each three ounces, juice of housleeck one ounce; put these into goats milk if you have it, if not, mares milk, and boil 'em up to an ointment, so bathe the place afflicted, laying some of it on plaisterwise, but give them bay salt in their water to drink.

For teeth-pains. Lance the gums that they may bleed, and rub them with salt, the juice of sage, onion, or garlick, two or three days, and the pain will be taken away.

For ulcers or aposthumes. Stamp lilly roots,

with rye-meal, the white of an egg, and stampt ground-ivy, make them into a plaister, with hogs laird, and lancing the swelling, lay on the plaister, and it will draw out the corruption; then put into the hole or wound a little powder of burnt allom and salt, so cover it with a plaister of turpentine or burgundy pitch; and after, to heal it, wash and cleanse it with man's urine.

For itch or scab. These are very troublesome and annoying to sheep, proceeding from a salt humour generated by cold or wet, or too much chafing or heating.

To cure these, take foot, rather of wood than sea-coal, the stalks of tobacco, and flower of brimstone, steep them in man's urine twenty-four hours at least, and then heat it and bathe the grieved part often with it.

For a shortness of breath, or a lasting cough. Take cummin-seeds, fenugreek-seeds, and liquorice grossly bruised, of each two ounces, of the herb colts-foot a handful well bruised, and two or three ounces of oyl of sweet almonds; or for want of that sallad oyl; boil them in two quarts of small beer or ale, and when the liquor is strained out, dissolve an ounce of honey and the like quantity of mithridate in it, and give half a pint very warm morning and evening.

For phlegm. Take oak-leaves or polipody stamp'd, and give it in ale.

For

For distempers and blemish in the eyes. Dissolve in eyebright-water of honey suckles or saladine, or of any of these bruised and infused in white-wine, powder of bole-armoniack and allom, with which take water and wash the eyes afflicted often when 'tis warm, and it will take away the grievance.

For the plague or rot. Having carefully separated the infected from the sound, put them into a close warm place, and wash them with water wherein rue has been boiled, as also bears-foot, an herb so called, bawm and sow-thistle; then take strong vinegar and seeth it with saffron, pellitory of Spain, polipody of the oak, birth-worth roots, and buglos; add to the vinegar strain'd a little aqua vitæ, and some sugar candy, and give every infected sheep a quarter of a pint in a morning for five or six days, not suffering them to eat any grass or wet meats; and of the distemper has not too far seized and infected their vitals, this will restore them to health and soundness.

For swelling of the belly. In this case let blood in the tail, and give it some of the blood mingled with sallad oyl, the juice of rue, and flower of brimstone, of each one ounce; keep in motion about an hour after, 'twill lessen the swelling, tho' near to bursting.

For broken bones, dislocated joints, sprains, or wrenches. You must take care first to bind up the bones or joint that is broken or dislocated

cated, putting it in right order for twenty-four hours, when swath'd, with hog's-laird make a poultice of buglos, camomile, comfrey, and mallows well bruised with hog's lard and a little aqua vitæ; lay it hot, and renew it once in two days, letting the sheep be kept warm, and at rest.

For the fever. It is known by the lolling out of the tongue, dulness of the eyes, short breathing and panting. To remedy which, separate the infected from the sound, then take penny-royal a handful, stamp it, and squeeze the juice into half a pint of vinegar; infuse a little mithridate in it, and give the sheep warm when fasting two or three mornings: drive him gently about half an hour then house him.

A cure for the red-water. When you find this, look for the spinning vein in the foot, and bleed it, then make a poultice of rue, bay-salt, featherfew, and butter, so lay it on hot.

To kill worms in the claws. Look between the claws, and you will find a head that is woolly, make a little slit, and draw out the wool that abounds there, which causes lameness, then mix a little tar and tallow; anoint it well, and the lameness will soon cease.

For the jaundice. Burn two ounces of allom, beat it to powder, with an ounce of turmerick. Put a dram of saffron to them, and give this
warm

warm in half a pint of man's urine, or only man's stale urine.

For choler or sharpness of humour. If you see the skin yellow or blueish, these humours abound, and cause a feverish heat: to reduce 'em, take a handful of elder-leaves, an ounce of the seeds of peony, (or for want of elder-leaves, elder bark) bruise and seeth 'em, in a pint of ale, and give it warm.

To destroy maggots or lice in sheep. To do this, take tar-water, the juice of bardock and briony-roots, and bath and anoint the place, and they will be effectually destroyed.

For violent heat. It often comes by over-driving, or being too much exposed to the heat of the sun, and often turns to fevers, or the plague, if not timely remedied. To do it, wash them with warm-water wherein sage, melilot, and lavender has been boil'd, so boil hyssop and polipody in whey, and give it the sheep to drink.

For the great and general scab or itch. This comes by rainy weather, mists, fogs, or much exposing them abroad to heats and colds, which breakings out being perceived, take the juice of rue, tar-water, and goose-grease, and anoint well the place as hot as may be endur'd, having first clipt away the wool, then clap some light wool over it, or flock shreds, and it will peel off. But to make the speedier cure let blood in the tail, and under both the ears,

ears, and give in a glass of wine the juice of carduus and flower of brimstone.

To prevent sickness. In spring and fall, make a purge of three or four sprigs of spurge laurel, a quarter of an ounce of antimony, and a little handful of dried damask-rose leaves; boil them in spring water, and give a quarter of a pint, and if the weather be seasonable, turn them from four or five hours after so grasing where they cannot come at any water.

To cure lambs yeaned sick. Boil a little saffron and cinnamon in some of the milk of the dam, and give it the lamb, and it will grow healthful and strong.

For the dropsy or puffing up of the skin. It comes by overmuch moisture in feeding, which gets between the flesh and skin, and cannot be evacuated by the pores, or sweated out, and so corrupting, often causes the rot. To remedy this, clip off the wool close behind each shoulder, and slit the skin there about an inch, then dip a tent of linnen cloth in oil of spike, and put it in, and so the water will be drawn thither, and evacuate by twice or thrice renewing the tent; then steep an ounce of regulus of antimony in a pint of ale, with a little spice called grains, and some brown sugar. Give a quarter of a pint each morning as warm as may be, and the cause of the distemper will in a little time be evacuated.

For biting of any venomous creature. Get half a pint of aqua vitæ, bruise a little handful of rue, and the like quantity of smallage, simmer them over a gentle fire, lay it poultice-wise on the place bitten, and what you strain out before you so apply it, give it the sheep to drink.

A remedy upon picking up any thing that is poisonous. Look under the tongue if you perceive the sheep to reel or stagger, and you will find a blister; cut it and let out the water, then rub it and the mouth with urine wherein bole-armoneiack and sage has been boiled, and give to drink half a pint of olive oil in a pint of new milk, but keep the sheep warm some days.

For the running scab. Bleed under the tongue and tail; boil balm and turmeric finely powdered in three pints of new milk, and give a pint at a time warm; and wash the sores with water wherein elder and burdock-roots have been boiled and keep the beast twelve hours without meat.

For pains in the bowels. As this is chiefly caus'd by eating food not wholesome, and known by the drawing up of the belly, and the sheeps spurning at his belly with his hinder feet, often lying down, and suddenly starting up again; to remedy this, you must take a handful of rue and southernwood, boil them with an ounce of coriander-seeds, in some
fair

fair water a pretty while, and then give it the sheep warm to drink in a morning fasting.

For the canker and ringworm. If this appears either in the mouth or skin, by the eyes, ears, or pole in the neck, make an ointment of fallad oil, salt, and allom over a gentle fire, and anoint the part well with it, and then cover it with a plaister of tar and flower of brimstone; and by so doing it, two or three times over, the cure will be effected.

To prevent the ewes casting her lambs. If you perceive a weakness in the ewe to bring forth with pain, or fear the loss of the lamb, lay her soft, and boil a little horse-mint (or for want of that, other mint) in a pint of ale, and so give it her warm, and she will yeane with ease.

For the leaf-sickness in ewe or lamb. Since this often comes by too much brouzing on hawthorn or oakleaves, known by staggering and turning round, thro' the chilliness of the blood, caus'd by such feeding, or phlegm amassed about the brain; so to remedy this, dissolve asafædita in warm water, and put half a spoonful into each ear of the lamb or sheep, and stop the ear close; and so the cure will be wrought, if timely taken.

For the polie or running at the nose.

Smoak them with flower of brimstone in a close house, by sprinkling it on a chafing-dish of coals, and give them vinegar in which bay-berries have been boil'd.

For

For the murrain. Make holes in their ears with an awl, and put in the root of sweetwort; then give an ounce of the oil of turpentine in a quarter of a pint of white wine, or for want of it vinegar, and sprinkle the sheep with water wherein fennel seeds has been boiled; and this may be safely given and used for the murrain of the lungs, occasioned by extream drought, or want of water in the hot seasons.

For rheum in the eyes. Get one handful of celendine, as much of honey-suckle-leaves and eye bright, boil them in a pint of white wine; spirit the decoction up the sheep's nostrils, and then wash the eyes with it.

To remedy the falling off of the wool. It is occasioned by the dryness of the skin, through the wasting of the sheep for want of moisture. To remedy which, boil ashe keys or leaves, and give the water to drink: give them three or four times chopt hay with fennel seeds among it, and sprinkle the sheep with the lye of wood ashes.

For bots or worms in either stomach or belly. Observe these by the sheep's stamping often, and striking at its belly with its feet, looking on its sides, &c.

To remedy it, stamp the leaves of corriander and wormwood, so mix the juice with honey, and give it the sheep fasting in a little vinegar or verjuice.

For the belt. Cut away the tags, and open
I the

the sore, cast fine sifted mould on it, and cover that with a plaister of tar, oil of turpentine, and goose-grease.

For the cramp. Get cinquefoil, or five-leaf'd grass, a handful, boil it in a pint of white-wine, and give half a pint in a morning warm, but bathe the legs with the oil of savin.

For the pox. It appears by pimples breaking out all over the body like the purples, which diseases is infectious, and therefore upon their first appearance a separation ought to be made between the sound and infected. To remedy this, change the sheep's pasture, and mix the juice of garlick with tar water, or very thin tar and urine, and so anoint the pimples: purge the sheep with laurel-leaves and roots of holly boil'd in water.

For the moorfound and turning evil. Let blood in the temple-vein, or thro' the nostrils, and rub the place with the juice of young nettles, and in half a pint of white wine give to drink an ounce of mithridate as hot as may be.

For a water in the sheep's belly. It comes by over-moist feeding, getting between the skin and the inner rim of the belly: grasp it hard with your hand till it rises like a bladder, then slit a little hole with a penknife, and put in a quill, so much of the water by pressing will run out; then anoint the place with a mixture of tar and butter to heal it; but if it happen
among

among the guts within the rim of the belly, you may purge it out with aloes and turmeric, each an ounce in warm milk fasting, for three or four days successively.

For the staggers. Get long pepper, honey, anniseeds, linseed, and liquorice each an ounce, powder what will pulverise, so put them all into two quarts of milk, and give it half a pint at a time, washing the mouth and temples with vinegar.

To fasten loose teeth. Lance the gums, rub them with burnt allom and bay salt, and so wash the sheep's mouth with water wherein bay salt, lavender, and sage has been boiled.

For a hurt or lame claw. Make a plaister of bees-wax, rosin, slacked lime, turpentine, and hog's lard; bathe the foot first with oil of camomile, then lay on the plaister, and bind it up, but don't suffer the sheep to come in stony, wet or dirty places.

For the swelling of the belly. It is caused by unwholesome food; to cure which, bleed in the tail, and give a drench of water and brown sugar wherein bayberries, rue, and camomile have been boiled till the water be very strong of 'em; then give a quarter of a pint of olive oil.

For a defect in the lungs. Get red sage one handful, purslain and the herb colts-foot the like quantity, with a root of garlick; bruise them, then infuse them in a quart of white-

wine; strain well the liquid part, and add thereto an ounce of honey, with half an ounce of mithridate, and give half a pint warm morning and evening.

For giddinefs and dazie. As it often happens in the excessive hot weather, much troubles the sheep, hinders their feeding, and endanger. their lives; so, to remedy it, let blood in the temple veins, and slit the nose-vein; then take mint, rue and baum, of each a little handful, and boil them in two quarts of small beer; give a pint morning and evening successively.

Of wounding in shearing. If in over-hasty shearing the skin be cut or rased, to prevent its being a scab, make an ointment of tar, and butter, and anoint the place: and to strengthen them after their wool is off, give them warm water wherein lavender has been infus'd, and a little boil'd corn, throw among their grafs some blades of onions, and coriander-seeds; and after you have shear'd 'em, put them in shady places, lest the sun scorch 'em and scald their skins, which heat may put 'em into a fever; beware when you drench 'em in any brook or pond, in order to the shearing, to keep up their heads, that they suck not in the water too much at their mouth or nostrils, lest it has the bad effect to produce rheums and head-achs.

To increase milk in ewes. If you find their udders drying up, or that they give but little milk, change their pasture to such as has short and sweet grass, and better than that from which you remove 'em; and if the ground hath a conveniency, drive them sometimes on the hills, and at others into plain ground or valleys, for where the grass is sweetest and shortest they will eat with the best appetite: and when you bring them home, mingle with their grass or short hay dill, vetches and anniseeds, and this will restore and encrease their milk.

To make an ewe in love with their lamb. If a ewe neglect her lamb new year'd, take a piece of her, clean dry it, then beat it to powder, and give it her in a quarter of a pint of white-wine, and it will make her exceeding fond of it.

Prognosticks of rot threatning sheep before it falls among them. About Bartholomew-tide, or the beginning of September, go out in the morning as soon as the sun rises clear, and taste the dew upon the grass of your pastures, and if it be bitter or brackish, or many long glittering flakes or streaks, like the weavings of spiders lie on it, and so continues for some time, it prognosticates a rot, or a very unhealthy winter for sheep, especially in the low wet grounds; or if they feed amongst grass that has not been mowed, to prevent the rot

taking hold of them, rub their mouth once a week with the salt call'd *adrecei*, dissolve it in sharp vinegar, and fright 'em early about the pastures with a dog till they are well heated, for this beats the mildews from the grass, and other dews that are hurtful to them in feeding, also the nettles, webs, and flasks, which otherwise they might lick up, and those contribute much to the rot.

The best grass for sheep is that amongst which grows a good quantity of melilot, self-heal, clover, cinquefoil, broom, white henbane, or knot-grass.

Of S W I N E.

As boars, sows, barrows, shoals, pigs, &c. their choice, breeding, and suitable remedies for the distempers that are incident to them.

How to make choice of a boar and sow, to raise a good breed. As for the boar, chuse from amongst others such as is strongly set, well truss'd, and not too long of body, his stones large, and not over hanging down, but rather drawn up close, which denotes heat and vigour, his mouth drawn upwards, but not over long; his breast and shoulders broad and thick, brawny and hard, his thighs full large and short, his bristles rough and strong, erecting themselves

selves on every occasion of anger or disgust; of colour white, or inclining to sandy, and not exceeding three years old.

To chuse a sow for a good breeder. Observe that she is long of body, deep-belly'd and flank'd, her head and snout not over long; that she has many teats, is broad buttock'd, her ribs broad and large, her eyes little, her legs not over long; for tho' swine with long legs may appear to be larger, yet it is but a deception of the eye, for the short-leg'd ones, according to proportion, are more profitable, as to fleshiness and substance, and will be sooner fatten'd, or breed more pigs. As to colour, only the black is rejected; and tho' the clear white is accounted the best, yet those that are spotted, and of different colours, may prove very well in all respects.

What time is most proper for the sow to take the boar; and how care is to be taken of her in the time of her going with pig, and farrowing.

The usual time of a sow's going with pig is four months, and may easily produce two farrows in a year, which being usually numerous, produces a great encrease; and when the sow is fourteen months old, or somewhat more, according to her strength and bigness, she is fit to take the boar; and her best time of breeding is till she be four years old. The boar's best time of brimming is, from three to five years, especially for such pigs as you intend to rear,

rear, for after that time they will be dwindles, and not arrive to any substantial growth.

Observe about Candlemas, in the encrease of the moon, to let her take the boar : she being serv'd three or four times for the greater certainty, when you perceive she has taken well, suffer the boar to come at her no more till some time after she hath pigg'd, lest he cause her to cast her farrow, which usually, when brought forth well-conditioned, are as many as she hath teats.

When your sow has farrow'd, if you perceive her milk scanty, you must help that defect at convenient times with bran and oatmeal sifted into milk; and now and then a little warm broth; and if the weather be warm and kindly, then may you wean them at a month, suffering them to go abroad, but let them eat wholesome green things, and scatter some ears of wheat and barley in their way, as also pease, to learn them to take other food, and then if you think fit, you may suffer the sow to take the boar again. When your sow is about to farrow, you will see her busy about making her own bed; then you must assist her with clean dry litter, that she may lie easy and at length: and if there be a difficulty in bringing forth, it is requisite that you assist her with your hands, being first anointed with butter or hog's lard; and to comfort and encourage her, give her warm broth with bran sifted into it, or a little

new ale ; and observe that when she is pretty fat gone with pig, that you keep her from acorns or sower food, which by overmuch feeding on will endanger her casting her farrow untimely, and so you may lose your profit.

Of gelding, splaying, sty-food, &c. At two months old, the pigs being lusty and healthful, you may proceed to geld your boar-bigs and splay the sow-pigs ; though if be let alone longer, 'twill not be amiss, as four or six months, but let this be done in the wain of the moon, and then kept in places where they cannot hurt themselves by leaping or overstraining ; and observe this be not done in a time of extream heat or cold, but in as temperate weather as the season will permit, for then they will the sooner heal and thrive the better, and their flesh spend the better.

If you are to fatten hogs, make your styes with partitions, for putting many together hinders 'em, and delays their feeding fat ; besides, being unruly quarrelsome creatures, the master-hogs will fright and beat the underlins from feeding. And to keep 'em free from the measles, observe to put finely sifted red-led or oaker in their swill ; as also keep from 'em all poultry, whose dung is offensive to 'em, and if eaten by them, often contributes to many diseases, as does carrion or dead flesh, though they will often devour it greedily : give 'em no fish water, nor the washings of mustardy plates

ears and tail ; boil mallows and groundfil in his wash, and add a little bay salt.

For vomiting and nauseating food. Give the swine fennel-seeds, ffoes, and splent beans boiled in wash, and this will recover his stomach.

For impostumes in any part. If they grow soft and come to a head, lancing will bring the corruption away, but if not, make a plaister of oil of spike, tar, turpentine, and lilly-roots, with rye-meal, which will draw 'em to a head ; then lance, and apply a plaister of bees-wax, mutton-suet, and Burgundy-pitch two or three days ; after that anoint with oil of camomile or mallows, and lay on a plaister of diachilon to heal the wound ; if there should happen any proud flesh, eat it out with burnt allom or salt finely powdered, tenting it with a rag or flax dipt in oil of petre.

For the Frenzy. This is a dangerous distemper, mostly caused through worms breeding in the head, and sometimes makes the swine destroy himself by beating himself against the fly, or tumbling down some steep place, or into the water, unless great care be taken.

Wherefore, for a timely remedy, take an ounce of the juice of briony root, as much of the juice of wormwood, single poppy-water a quarter of a pint ; hold up his head by strength, and put these warm into his nostrils, and so hold it the space of a quarter of an hour at least

least, then give him a drench of vinegar wherein colewort leaves or lettice have been boiled.

To restore a defective liver. Take an ounce of flower of brimstone and half a dram of creud antimony, put it into half a pint of verjuice, or the juice of sower grapes, and give it warm; this will also restore a pall'd appetite.

For blaine or boils. Take bees-wax, turpentine, Burgundy-pitch, and a little soft grease to make them into a plaister over a gentle fire; clip away the hair or bristles where the sore is; anoint it first with ointment of tobacco, and then lance and sprinkle burnt allom or burnt salt on the wound, after anoint it with the former ointment, so lay on a plaister of sheeps suet and bees-wax to heal it.

For stubs or thorns in the feet. Sometimes these are got, and cause very much lameness and swelling. When you first perceive it, open the place grieved with the point of a sharp knife, and draw out the thorn or stub if you can; else lay Burgundy pitch and turpentine, which will do it, then anoint it with oil of spike and olives, and by keeping it from dirt or gravel, it will heal.

For pains in the teeth. It is caused by wind or hot rheums, and sometimes make the swine run mad. To remedy it, lance the gums, rub them with burnt salt and allom dissolved in vinegar; bleed him under the ears, and give water wherein fennel has been boiled.

To remedy scowering. This happens by the often change of food, especially during the time the swine is up a fattening, and much hinders the progress of it. It is stayed by putting the powder of floes in verjuice; let them steep twelve hours, then put the verjuice into a quart or more of new milk, and give it.

For scurf, or manginess. It is occasioned by the corruption of the blood, causing a lameness or falling away in swine, making them sick and unsightly. To remedy which, let blood under the tail, and rub him with a wool card from back to tail till the skin bleeds, then make an ointment of tar, goose-grease, and brimstone, and anoint him all over; give him short clean litter, with warm food, and keep him close for two or three days.

For extreme drought. This happens by excessive drinking in hot weather, therefore when you see them drink immoderately, boil wood-forrel and housleek in the water you give them; peg their ears, and put a tent of root of sweet-wort into the holes, and so the heat of the liver will be cool'd, and the violent thirst cease.

To prevent decay in flesh, and falling away. It comes from a distaste of food, that the hog will come to the meat, put his snout in, and then suddenly fall back and stare as if he were dying; which some have ignorantly supposed to be caused by witchcraft.

To remedy this, give him water wherein
the

the roots of wild cucumbers have been stamp and strained, and let him fast an hour; then give him good warm pollard, and in two or three days so doing he will be restored to an appetite by vomiting up the foulness of his stomach, and after encrease in flesh and health.

For the sleepy evil. As the heat of the weather mostly occasions this, by hurting the brain and doreing it, or else over feeding, which sends up hurtful vapours from the stomach, to remedy which, keep the swine fasting twenty four hours, and having water wherein the herbs stonecrop and comfrey have been boiled, give it him to drink, anointing his temples with oil of favin.

For the milt pain. Where this pain is contracted, you will perceive the hog go reeling and sideling; this is cured by boiling wormwood and honey in fair water, and give it.

For the quinsy. As this much afflicts swine, and is very dangerous if not timely remedied, so when you perceive it, immediately let blood in the vein behind the shoulder; or if the kernels fall considerably under the throat, or by the side of the neck, bleed under the tongue, and rub the mouth with salt, and wheat flower; then take an ounce of shavings of hartshorn, a handful of daffodil roots, and the like of salt, stamp them and boil them together in vinegar; give half a pint hot, and anoint the swelling with oil of spike.

For the spleen. It comes by over much feeding, causing corrupt blood about the liver and heart. To remedy this, give him water wherein tamarinds have been boiled, and the coals of burnt heath often quenched, and by frequently drinking it, the pains will cease.

To cure the lugging of a dog. If you would prevent maggots or corruption in the wound, anoint the ears, being first wash'd with vinegar, with an ointment of tar, mutton-suet, and oil of olives or fallad oil; lay flocks over it.

For the biting of mad dogs. Dissolve a handful of bay-salt in a pint of man's urine and a little foot, beat these together with the yolks of two eggs, bathe the wound with it, and then lay on a plaister of turpentine, mithridate, and bees-wax, and give the swine some verjuice warm to drink.

To kill Lice and Ticks. Anoint with oil of turpentine or linseed oil and flower of brimstone:

To kill worms and maggots. Get black soap, or for want of it other soap, mix it with tar or tar-water, and anoint the place: this will not only kill the present, but prevent the future from breeding in fore places.

For bruises, fractures, or broken bones. Get turpentine, sheeps-suet, and bees-wax, of each an ounce, make a salve, but bathe first with oil of camomile, then lay on the plaister and
bind

bind up the fracture or dislocation, that they by this means may be healed and come right again.

For bloodshot eyes or specks. Wash them with the juice of rotten apples and bettony, and give sliced parsnips or turnips in their food; this also will take away inflammations in the eyes.

For imposthumes or swellings about the throat, &c. Bruise a quarter of an ounce of aloes into fine powder, put it into a quart of wine vinegar, with a handful of camomile and the like quantity of May-weed: boil them a little, and give the liquid part to the swine to drink; then clip the hair close, and lay on a plaister of tar and rye-meal: this will either take away the swelling, or cause it to break, or render it so that it may be lanced and the corruption brought away: then you may heal it with the salve melilot.

Overflowing of the Gaul. This is often attended with several diseases, if not timely remedied, and is known by the skin inclining to yellowness, as also the roof of the mouth, which when perceived, take of bole-armoniack and turmerick each an ounce, beat them to powder, and add an ounce of honey and a dram of saffron; infuse them in a quart or three pints of sweet-wort, and give it without straining.

For the Flux. It comes from great loosenesses in eating unwholsome food. To remedy which, bruise nutgalls or dry'd acorns, floes, and white starch, of each an ounce; boil them in a pint of vinegar and a quart of milk; strain it, and give it warm morning and evening.

For the Plague, or any other disease in the milt. Bruise long pepper, coriander seeds, and ginger, half an ounce each; boil them in milk with an ounce of camomile-flowers, and give it hot three times at three hours distance.

For several diseases in the eyes. If there be specks, films, or spots, blow with a quill the powder of burnt allom into the eye, and it will eat 'em away: if rheums or watering, take the juice of housleek, celandine, and betony, and wash the eyes often with it.

For a cold or busking cough. Take the juice of longwort and liquorice in powder, each two ounces, sallad oil four ounces, the juice of the herb coltsfoot an ounce; give it fasting in a pint of warm ale or beer.

For belly-pains. Get May-weed a handful, ground ginger an ounce, anniseeds and fennelseeds a like quantity, treacle an ounce; boil them in a quart of beer.

For swelling upon eating any infectious herbs or the like. Mad-charvil, milfoil, hemlock, and henbane often sicken swine with eating,

as do many other things, which they ought to be kept from as much as may be ; but if this happens, boil anniseeds and wild cucumbers in spring water, put in a handful of bay-salt, so give the liquid part warm to drink, and it will purge out the infection.

For Rheums in the head. Purge the swine with garlick, and burn a rag with storax and brimstone under their noses in a close place : or do it by springling the powder of these on a chaffing-dish of coals.

For blindness in pigs newly farrowed. This happens especially in cold frosty weather, or a defection in the sow's matrix. To remedy it, give 'em juice of housleek and celandine in their milk, and wash their eyes with the same juice and milk, by dipping a feather when 'tis warm.

For laxativeness in swine. It often falling on them, wastes their flesh, hinders their growth and fattening. To remedy this, give them dry meat often, as pease, beans, barley, and four grapes ; and in their drink put vinegar, verjuice, or four berries.

For a sow sick in or after farrowing. Get baum, lavender-flowers, and a handful of dry rose leaves, boil them in a quart or two of sweet-wort, sweeten it with a little coarse sugar, and give half a pint warm at a time, and it will wonderfully revive and strengthen her.

For

For falling out of the womb or fundament.
Put it up as well as you can with your hand
dipt in oil of linseed or other oil, when you
have first sprinkled it with powder of aloes
and allom.





P A R T III.

Farriery Made Easy.

*How to know a Horse's Age while he hath
Mark.*

WHEN a horse is two years old and a half he hath twelve foal-teeth in the fore-part of his mouth; and about that time, or soon after, four of them do fall, viz. two above, and two below, in the very middle. In some horses they do not fall till three years, the observation not being so exact as always to answer to years and a half. There grows in their place four others, called Nippers, or Gatherers,

ers, much stronger and larger then the foal-teeth, and then he is at most but three years old, and commonly but two and a half.

At three and a half, and sometimes at four, he casts the next four foal-teeth, viz. two above and two below, and in their room come four teeth call'd Separators.

There remains then but four foal-teeth in the corners, which he changes commonly at four years and a half. It will be necessary to keep in memory two and a half, three and a half, and four and a half; that is to say, when a horse has cast two teeth above and as many below, he is but two years and a half: when he hath cast four teeth above and as many below, he is three years and a half; and when he has cast six above and as many below, which is to have them all changed, then he is four years and a half old.

It is to be observed, that the corner teeth in the upper gums are cast before those in the nether: but on the contrary the under tusshes grow out before the upper. And horses are often sick when the tusshes of the upper gums cut, but are never so when those below come forth.

The tusshes are preceded by no foal-teeth, but grow up when a horse is about three years and a half, and commonly grow up before the corner teeth are cast.

So soon as the Gatherers and Separators have pierced and cut the gums, they make all their growth in fifteen days: but the corner-teeth do not grow so suddenly. Yet that doth not hinder but that at their very first appearing they are as thick and broad as the other, but are no higher than the thickness of a crown-piece, and very sharp and hollow.

When a horse hath no more foal-teeth, and that his corner-teeth begin to appear, he is then in his fifth year; that is, he hath about four years and a half, and is going in his fifth. When he first puts out his corner-teeth, they are of equal height with the gums on the outside, and the inside of them is filled with flesh until he be near five; and when he comes to be five years o'd, that flesh disappears, and there will remain in the place of it a hollow; that is, they are no high on the inside as the out, which they will come to be about a year after their first appearing: so that when a horses corner-teeth are filled with flesh, you may confidently affirm that he's not five.

From five to five and a half, the corner-teeth remain hollow on the inside, and that part which was filled with flesh is empty.

From five and a half till six, the hollow on the inside fills up, and the teeth grow and become flat and equal at top, only a little cavity remains in the middle, resembling the
eye

eye of a dry bean, and then they say the horse is entering six. And so long as a horse's corner-teeth are not so high on the inside as the out, he is still said to be but five, altho' he be but five and a half, and sometimes six.

You may also do well to remember, that at four years and a half, when the corner-teeth appear, and are filled on the inside with flesh, that the outside of them will then be about the thickness of a crown above the gums, and will so continue till five. And from thence to five and a half the outward edge will be about the thickness or two crowns above the gums. At six they will be about the breadth of ones little finger above the gums, and his tushes will be at their full length. At seven years they will be about the thickness of the second or ring-finger above the gums, and the hollow almost quite worn out and gone.

At eight years old the horse will be razed : that is, none of his teeth will be hollow, but flat quite over, and about the thickness of the middle finger above the gums.

After a horse has razed, a man cannot judge of his age, but by the length of his fore-teeth, or by his tushes.

As the gums through time grow lean, so they make the teeth to appear long ; and it is certain, that so much the longer a horse's teeth are, he is so much the older ; and as he
grows

grows old, his teeth will contract rust and become yellow: not but there are some old horses who have very short and white teeth; and people say of such horses, that they have a good mouth considering their age. Some also will have a black speck in their teeth, resembling the true mark, a long time after they are past eight or nine; but then it is not hollow.

The tushes are the most certain mark whereby to know a horse's age.

If a horse be but six, the upper tushes will be a little channell'd, or somewhat hollow'd or groov'd upon the insides: and when he is above six, they fill up, and become a little round in the insides. This observation never or rarely fails.

If you feel the tushes of his upper jaw with your finger, and find them to be worn equal with the palat, the horse is then at least ten years old. This observation seldom fails, unless the horse when young hath carried a bigger mouth'd bitt than was proper for him.

Young horses have always their under-tushes sharp and pointed, pretty long, somewhat edged upon both sides, and without any rust upon them: but as they become aged their tushes grow big and blunt, round, and scaly, and in very old horses, they are extremely thick, round, and yellow.

L

A horse

A horse is said to be shell tooth'd when he has long teeth, and yet black specks in them ; and this mark lasts all their life. It is easily known, because the mark appears in the other fore teeth as well as in the corner teeth.

In age, the points of the Gatherers stand outward a little ; and when extremely old, point almost strait forward ; but when he is young they stand almost strait up, and are just equal with the outer edges of those above. Sometimes the upper teeth do thus point forward, but for the most part it is the under that do it.

If you require no exactness, but only to know if he be young or old, lift up the upper lip ; and if his upper teeth be long, yellow, and overpassing those below, it betokens age. As the contrary signs, such as short and white teeth, and those of the upper jaw not overpassing those below, betoken youth.

There are some horses whose teeth continue always white and short, as if they were but six. When such horses fall into the hands of cheats, they oftentimes counter-mark them, by hollowing the corner-teeth with an engraving-iron, and putting some double ink immediately into the hole, and there let it dry, which will remain as long as the teeth continue hollow. Others with a red-hot iron burn a grain of rye in the hollows of the teeth, which makes them perfectly black ; for there
proceeds

proceeds from a rye a kind of oil, which by the help of the burning, cleaves fast to the hollows of the teeth newly cut. To prevent being cheated by such villains, observe if there be any scratches on the outsides of the hollows of the teeth (because the graver sometimes slips and scratches the other part of the teeth) for then you may conclude him countermark'd; and an artificial hollow is much blacker than a natural. Take notice also of his upper tusshes; the insides of which should be groov'd or hollow until the horse be seven years old. Observe also if he have any signs of old age, such as the upper teeth long, overpassing those below, and yellow; the lower part of the neither jaw-bone sharp and edged; the under tusshes used, big, and scaly; if he have these tokens of age, and yet appears marked, it is very probable that he is countermark'd.

I have heard of filing a horse's teeth to make 'em short; but I believe no man ever made twice trial of it in his life time. For if you file the under teeth, which are those at which people look to know the age, then those above will be observed to be longer than those which have been shortned: And if the teeth both above and below be shortned, then the jaw teeth or grinders being at their full length will join, and so hinder the upper and lower teeth, which were shortned, from

closing, which will plainly discover the cheat; for the horse's mouth being shut, the fore-teeth will be a great distance from each other. Besides the horse would not in a long time be in a condition to chew his meat, by reason of the stress endured by the filing; neither could he draw his hay or straw from the rack, because of the distance between his lower and upper teeth.

Having now explained how a horse's age may be known by his teeth, I shall next give you some other rules, tho' not so certain as the former.

Some have recourse to the joints of the tail, passing their hand along it, to feel for a knot or joint in the upper part of it, which cometh forth when he is between ten and twelve; a second when he is fourteen. Others thrust back a horse's under lip; and so many plies or folds as they find, so many years old they say he is. They who are satisfied with these marks may make use of them; for my part I esteem them very little. After the mark is gone, I always have recourse to his legs, to know if they be neat and good; to his flank, if it be well truss'd, and not too full and swallow'd up; to his feet; and lastly, to his appetite. However, I shall give you some other observations to know the age of a horse that is past mark.

When

When the pitts above the eyes are extremely hollow, it is for the most part a certain token of old age; although horses got by an old stallion have them very deep at four or five years old, as also their eye-lids and eyes wrinkled and hollow.

In young horses, that part of the nether jaw bone, which is 3 or 4 fingers breadth above the beard is always round, but in old horses sharp and edged: so that a man who is accustomed to it, will, before he open a horse's mouth, judge pretty near of his age. This is a good remark.

Another certain mark of old age is when a horse Seeleth, that is, when upon his eye-brows there groweth about the breadth of a farthing of white hairs, mixed with those of his natural colour. A horse never seeleth until he be 14 years old, and always before he be fifteen or sixteen at farthest. The light sorrel and black do sooner feel than any other colours.

Horse coursers commonly pull out those white hairs with pincers: but if they be so many that it cannot be done without making the horse look bald and ugly, then they colour their eye-brows, that they may not appear old.

You may judge of his age also by looking on his palat, because as he grows old the roof

mouth grows leaner and drier towards the middle: and those ridges which in young horses are pretty high and plump, diminish as they increase in age: so that in very old horses the roof of the mouth is nothing but skin and bone. This remark is good, especially in mares, who have seldom any tusshes whereby to know their age.

Grey horses become white, as they grow old, and when very aged, are white all over; but this doth not conclude, that no horses are foaled white, altho' but very rarely. But those which are foaled grey are known by their knees and hams, which continue, for the most part, still of that colour.

General Rules necessary to be observed, relating to [the Feeding, Dressing and Exercise of
H O R S E S.

UPON the feeding, dressing and exercise of healthy horses, wholly depends the continuation of their perfect state of health, therefore an uniform and regular simplicity must be observed in a horse's diet; for by dispensing his daily food with regularity and judgment, he is prevented from experiencing a number of destructive complaints, which are always the result of irregularity and intemperance.

For

For English horses barley is not so durable or good a diet as sound ripe oats, which universal experience has proved agrees best with their constitutions; the too frequent use of bran, whether scalded or dry, weakens and injuriously relaxes the bowels: and what bran is given to them should be perfectly sweet and fresh, for from the use of musty bran mixed with foul seeds and chaff often proceeds that dangerous disorder the Bots, with which our young horses are so generally afflicted: this very unwholesome food they are plentifully supplied with by those persons who breed them and rear them up for sale. On the other hand, for diseased horses, good bran when properly scalded, is an assisting nourisher to the internal, but it must be administered with prudence, and as it is thought necessary in the distemper'd beast's situation.

In the choice of hay, the owners of horses cannot be too nice, as it is an article that principally constitutes the diet of horses in general. Hay that is infected with dust of any kind, is extremely prejudicial to the health of the animal that feeds upon it, therefore it should be carefully cleansed and separated from any intermixed dirt, by shaking it several times before it is put into the rack.

The stomach of a horse is much depraved when you perceive him fond of eating his litter;

ter; to correct which depravity, reduce some chalk to powder and mix it, and cut some straw along with his feed.

To labouring horses, beans afford much nourishment, and for a durable meal surpass all other grain.

For horses troubled with the Bots, indigestion, &c. take some straw, cut it small and mix with it a feed of hay: this I know by personal experience to be very useful in these cases.

For those horses who have been little used to exercise, and who are glutted with a constancy of good food, and not used to exercise, a month or six weeks of summer's grass in May and June is very necessary. Horses that are troubled with wind-galls, swelled legs and stiff limbs, more particularly require it.

Horses should not be pastured in July and August, for in these months the excessive heat, and the great number of flies makes the days insupportable to them; and the gourdiness or wind-galls of afflicted horses, will rather be considerably increased than diminished by their continual stamping, kicking, and rolling themselves about for ease.

The drinking of sea water has a very good effect in obstinate chronical disorders on morbid horses, therefore though their cases may seem

seem desperately bad, I advise a trial of this much recommended remedy.

When horses grow hot and costive on their being brought home from grass, take some hay, chop it very small, and mix it along with some bran with their corn: exercise and diet them very moderately for some time, then gradually increase both to their due proportion, giving them sometimes a feed of scalded bran.

Sometimes to sweeten the blood and keep the body properly open, equal quantities of sulphur and the liver of antimony are mixed with their mashies or feeds of corn; but this apparently succeeds best, and is of greater service when the blood has been previously and gradually warmed for eight or ten days with gum guaiacum and antimony.

When you design to soil a horse in the stable, let the herbage procured for that purpose be quite sappy, young and tender: it should be cut fresh every day, for when it is old and fibrous, consequently it is deprived of its sap, and frequently creates obstructions in the bowels by its tendency to putrefaction, when an immediate evacuation should be obtained.

Horses should not be soiled immoderately, for if they are, they will decrease considerably in their flesh. Soiling and grazing are widely different, for in grazing when the grass has

has purged a horse, it fattens him afterwards; but in soiling he loses his fat, which continuing, the soiling will not restore to him: the soiling should therefore be timely changed to a more solid diet, and other kind of proper food.

Horses that work hard and constantly, should be well and carefully fed, and require good allowance of corn; other horses that are used only for amusement and pleasure, should be fed in proportion to their general exercise.

When a horse comes out of a dealer's hands, he should lose blood and have his diet lowered, with moderate walking exercises.

General rules relating to bleeding and purging horses. Bleeding is requisite now and then for those horses that stand much in the stable, and are constantly well fed. Mangling their hay is a sign of their indisposition, and should be noticed.

Bleeding greatly abates the feverish heat which young horses are subject to when they are shedding their teeth; all inflammatory disorders either in the eyes or elsewhere, colds and fevers of all kinds, and strains, falls and bruises particularly demand immediate bleeding; and when a horse grows fleshy at grass, or when at any other time he appears heavy, bleeding is necessary. When they are let
b'ood

blood, you should measure it that you may the more exactly ascertain what quantity of blood they loose, and whether it is or is not a sufficient quantity and as much as their disorder requires they should loose. The blood when cold, carefully examine, and form your opinion of his condition, by the appearance of its colour and consistence. These methods of treating horses respecting the bleeding of them, I have ever practised with good success.

As to the purging of horses, they are in general purged with great difficulty; the physic seldom begins to operate until it has lain near twenty-fours in the horse's guts to whom it is given; for it has to pass through a tract of bowels (laying in a horizontal position) of above thirty yards.

Purging is also necessary in spring for stabled horses, who are not much exercised or rode out in the air. They should be previously prepared by bleeding, lowering their usual diet, and by giving them scalded mashes of bran now and then. Purging is also requisite in disorders of the liver and stomach, and for gross, full fed horses; but they should be always given with caution, and postponed until the horse that requires them has been properly prepared for the taking them, as before directed; which preparation unloads the stomach of any indurated excrements, by
opening

opening the bowels and clearing the internals of any obstruction, which otherwise might prevent the effectual operating of the physic, by causing dangerous gripings, &c. likewise for horses that fall off their stomach, whether occasioned by ingendering crudities and indigested matter, or proceeding from a surfeit by too full feeding; mild purges are very requisite; here it is proper to observe, that for horses of a hot temperament, mild cooling physic is the best, for they cannot bear the usual aloetic purges.

Purges though properly prepared, will not always pass off by stool; but though they do not, their operation may be more efficacious as an alterative, to purify the blood by passing off by urine, &c. and all purging medicines perform as alteratives, when mixed with other physic and given in moderately small quantities.

The best manner of giving purges and working them off is as follows: give the purge upon an empty stomach early in the morning; four hours after or rather sooner if you think it necessary, give him some scalded bran and put some hay into his rack; the same day he should have two more mashes, but you may venture to give him raw bran if he loaths the warm mash; if he will not drink white warm water, give him some without bran, but it will be much better with a pint
of

of bran squeezed in it : treat him in this manner the first day, and early the next morning give him another mash, or as much warm water as he chuses to drink ; if he refuses to eat the mash then ride him very leisurely about, but observe not to take him out of the stable until he has been sufficiently cloathed, and except he purges very much : do so two or three times that day, but if he purges violently one or two gentle exercises or airings will be enough for him, and at night give him a moderate feed composed of oats mixed with bran. If you can get him to drink plentifully during the operating of the purge it will be so much the better ; and if he will not touch warm'd water you must let him have some cold, rather than not have drink at all. The following receipt for a purge has been generally approved of by the most eminent judges:

Of grated ginger take one drachm, of salt of tartar and jalap each two drachms, and of succotrine aloes ten drachms; to these put of oil of cloves thirty drops, and make all the ingredients into a ball of a proper consistence with syrup of buckthorn;

Castile soap is an excellent addition to any of the above receipts; for a horse of a gross constitution half an ounce may be added, and that quantity proportionably increased for stronger horses.

For fine delicate horses. Take of grated ginger one drachm, of the very best rhubarb finely powder'd half an ounce, and of the finest succotrine aloes one ounce; form these ingredients into a pretty stiff ball with the syrup of red roses.

After purging, some horses lose their appetites: when they do so, an infusion of saffron anniseeds, and camomile flowers, is a necessary, beneficial strong, stomachic drink.

When a horse purges too long, gum arabic water is a good remedy, which is made as follows:

In a gallon of water put half an ounce of bruised cloves, carraway seeds one ounce, juniper berries half an ounce, gum arabic and tragacanth four ounces each; let them all simmer together until the gums are quite dissolved, then strain off for use; and of this liquid infuse a quart at a time in half a pail of water: some horses are averse to taking it in this manner, therefore it must be given such pretty often in a horn.

Warm diuretics are the only remedy to be given when a purge does not operate; when this is the case, the horse swells and refuses his food: the following diuretic I recommend to my readers:

Take of oil of juniper two drachms, of unrectified oil of amber two drachms, nitre one ounce, camphor (dissolved in a small quantity

quantity of rectified spirit of wine) one drachm, and syrup of marsh-mallows four ounces; mix it with a pint of white wine for use.

When a physick'd horse swells he should not be rode about, but, until he evacuates lead him leisurely along in hand; and when he has had some vent, he may then be back'd and rode gently for a proper time.

The drink of a horse should always be made palatable; all nauseous things should be made into balls, therefore to render their drink as little ill-tasted as possibly, it should be sweetened with honey.

Before a horse gets mercurial physick, he should have two drachms of calomel mixed up with some honey, and half an ounce of diapente given him the preceding night.

I shall proceed to prescribe some forms for clysters.

Clysters should rather be frequently repeated than given in too large a quantity at one time, which ought never to exceed three pints, indeed a quart is sufficient: nor should they be made very fat, milk pottage, rice milk, or broths made of trotters, sheeps heads, or other meats properly strained are in their kinds extremely nourishing. In giving clysters a bag and pipe is much preferable to a syringe; the latter throws up the clyster too forcibly, which occasions its being rejected as fast as it is given; but when the former is

made use of, the clyster gradually ascends by the gentle pressure of the bag.

Before an emolient clyster is given, a small hand after having been dipp'd in sweet oil should be gradually and tenderly passed up the fundament of the horse unto whom the clyster is to be given, with intent to clear the passage for the clyster by bringing away any hardened dung, which otherwise might prevent its passing freely.

For a laxative emollient clyster, take the underneath receipt.

Take a handful of salt, oil one pint, and half a pound of treacle; mix these with two quarts of water gruel for use.

The following purging clyster, is an immediate remedy in some fevers with inflamed lungs, or any disorder that demands speedy relief by evacuation.

Boil in three quarts of water for one quarter of an hour bay berries and anniseeds bruised of each one ounce, bitter apple half an ounce, fena one ounce, and of marsh mallows three handfuls; then pour off, and add to the liquor half a pint of oil and 4 ounces of syrup of buckthorn for use.

For a restraining clyster, take the following receipt:

In two quarts of water boil until one is nearly wasted of balustines one ounce, fresh or dry red rose leaves one large handful, and
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of pomegranate bark two ounces: when it has boil'd as above directed, pour off and dissolve it in four ounces of discordium.

But if the pomegranate bark cannot be conveniently got, instead of it you may substitute oak bark, and you may add a pint of red port wine.

The longer clysters of this kind lie in the bowels, the more serviceable and efficacious they are: but observe, never give them in large quantities.

When you design to give a purging clyster to a horse, beware of giving him a solution of coarse aloes for that purpose, for they excite feverish and frequently convulsive symptoms, and always gripe horses violently.

Of the method of curing bots and worms in horses. Bots in the strait gut have been frequently cured, by giving to the afflicted horses a spoonful of savin, and three or four cloves of garlic in moisten'd oats or bran twice a day: the following aloetic purge should be given between whiles.

Of oil of amber and savin take one drachm each, of myrrh finely powdered and aristochia of each two drachms, jalap one drachm, and the finest succotrine aloes ten drachms: form these into a ball, with a sufficient quantity of syrup of buckthorn.

For destroying the ova. Take crude quicksilver two drachms, venice turpentine half an

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ounce;

ounce; rub the quicksilver until no glistening appear, then add an ounce of aloes, a drachm of grated ginger, thirty drops of oil of savin, and a sufficient quantity of syrup of buckthorn to make a ball.

One of these balls may be given every six days, with the usual precautions in regard to mercurial physic; and these powders intermediately.

Take powdered tin and ethiop's mineral of each half an ounce: give every night in a mash or his corn.

If the diseased horse feeds badly, and is of a tender constitution, the following bitter drink will greatly contribute to strengthen his stomach and assist his digestion; for the generation of worms principally proceeds from a bad digestion and weak stomach.

Infuse in three gallons of ale for a week 4 ounces of juniper berries, iron filings half a pound, powdered jesuit's bark two ounces, tops of centaury three handfuls, camomile flowers two handfuls, gentian root 3 ounces, galangal and zedoary 2 ounces each: while these ingredients are infusing, shake the vessel that contains them frequently; and of the infusion give a pint night and morning.

Of the symptoms of the yellows or jaundice, with remedies for the cure of that disease in horses.

This disease is first perceived by the yellowness of the eyes, the tongue and roof of the mouth

mouth, and the inside of the mouth and lips being of the same hue, the horse looks very dull and refuses his food, and tho' the fever is at first very slow, yet that and the yellowness increase quickly together, his urine has a nasty brown colour, and when settled has the appearance of blood, and he makes it with great pain & difficulty. In old horses the belly becomes hard and swoln, and a cure is doubtful, if the liver has been long diseas'd; but in young horses, and when the disorder is check'd in time a cure is practicable, if the following directions are strictly observed.

The first is to bleed the horse plentifully, and as jaundic'd horses are generally very costive, make a clyster of the following ingredients, which throw up as soon as possible in the manner I have before directed, namely, with a pipe and bag.

In three quarts of river water put one handful of fresh camomile flowers, one ounce of fennel seed, and two handfuls of marshmallows; boil these until one quart of the water is consumed, then strain and add a pint of linseed oil and a quarter of a pound of treacle.

The next morning give him the following purge: Take succotrine aloes six drachms, saffron two drachms, and indian rhubarb finely powdered one ounce and an half; which
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make up with a sufficiency of syrup of buckthorn.

Repeat this purge three times, and give him the following balls and drink, immediately, and at proper intervals.

Take castile soap one ounce, millepedes half an ounce, and ethiops mineral the same quantity; form these into a ball of a proper size, one of which give every day, washing it down with a pint of the underneath opening draught.

In a gallon of water put two ounces of sliced liquorish, sliced burdock root half a pound, turmeric and madder root of each 4 ounces, and rhubarb 4 ounces: boil the quantity of water away to three quarts, strain it and make it palatable with honey.

Three or four ounces a day of turmeric and castile soap made into balls and given to the distemper'd horse, will in recent cases prove successful.

You must in case this prove ineffectual, have recourse to mercurial physic, and repeat the dose at proper intervals more than once or twice, afterwards throw down the following alterative bals:

Of castile soap take half a pound, saffron half an ounce, filings of steel two ounces and an half, millepedes three ounces; cinnabar of antimony four ounces, and salt of tartar three ounces; make these into proper sized balls

balls with good honey, one of which give every night and morning, washing them down with a pint of the opening drink before directed.

On the recovery of the horse, if a fat one, to put in a rowel will not be amiss; at any rate he must have three or four mild purges given at proper distances, but should not be purged too much.

Of disorders of the stomach and bowels, and of the Lax and Scouring, with proper remedies prescribed to be used in any of these cases and how to treat the sick horse. When a horse voids quantities of greasy matter and slime, the following drench repeated every other day for three times will be found extremely beneficial in such cases.

Of sweet oil take four ounces, and rosin finely powdered one ounce, cream of tartar four ounces, and lenitive electuary four ounces and an half; mix these ingredients with a pint of warm water gruel for use.

When given twice a week with warm gruel and scalded bran, an alterative ball made in the following manner has without any other assistance effected a cure.

With the juice of Spanish liquorish make into a ball of a fit consistence, the following ingredients, viz. diapente one ounce, and the best succotrine aloes half an ounce, to which add a spoonful of amber oil, half an ounce of
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the best indian rhubarb, saffron one drachm, and myrrh one drachm and an half.

When a flux rages violently, dissolve two ounces of roach allom, three ounces of bole, and two ounces of diascordium with the cordial ball, in two quarts of hartshorn liquor, and give the horse a pint of this restraining drink four times a day; if you add a pint of port wine it will be still better:

A strong decoction of oak bark, if given at the same time; will greatly assist the above remedies.

When the lax is attended with a fever, rhubarb and lenitive electuary should be first given in the following proportions, viz. two ounces of lenitive electuary, and half an ounce of rhubarb; when this has done operating take a pint of red port wine, mull it with cinnamon, and then infuse in it better than half an ounce of diascordium: give this drink the night after the working, and afterwards give the rhubarb and lenitive electuary ball once in three days, and the mull'd wine and discordium every day while requisite.

When a horse is tortured with griping, and his flanks look full and distended, it is an evident sign that the distemper increases; in which case increase the quantity of discordium in his night drink to a full ounce, and throw up the following restraining clyster:

In two quarts of water boil pomegranates and balustines of each one ounce, of red or damask roses near a handful, and camomile flowers a handful; let these boil until one quart of the water is wasted away; then strain off, and in the liquor dissolve three ounces of diascordium, and one ounce of mithridate, and throw it up with a pipe and bag.

A pint of port wine if added to the above receipt will prove beneficial.

For the bloody flux. The first symptoms of the disorder are, the horse's evacuating blood and appearing in great agonies, occasioned by the severe gripings and excruciating pains he feels in his bowels; when this is the case, the following restraining clyster will be of singular use:

In three quarts of forge water boil burnt hartshorn three ounces, tormentil roots two ounces and a half, and oak bark four ounces; when the water has boli'd away to two quarts, strain it and put to it opium half a drachm, starch four ounces, and diascordium two ounces and a half, and use it.

The following restraining drink if given twice a day will also prove very serviceable:

Dissolve in a pint of hartshorn drink sixty drops of liquid laudanum, indian root powdered half a drachm, mithridate an ounce,

and soft chalk two ounces, to which add four ounces of red wine.

The usual drink of the horse should be gum arabic dissolved in hartshorn water.

Gentle openers should always be given to horses when they are costive, namely, lenitive electuary, glauber salts, or cream of tartar,

In the following manner :

In a sufficient quantity of warm fresh ale, dissolve two ounces of cream of tartar, and the same quantity of lenitive electuary.

Or, Dissolve in warm ale two ounces of glauber salts, and two ounces of lenitive electuary.

These are excellent mild laxatives, and should be given to costive horses every morning.

Of the cholic or gripes, and pains in the bowels, occasioned by sudden accidents. The symptoms of a horse's being afflicted with the flatulent or wind cholic, are his frequently lying down, and suddenly springing up, stamping violently with his fore feet, striking his belly with his hinder feet, and loathing his food ; and when the malady rages with violence, he will be in convulsive agonies, his eyes sometimes turn'd up, and sometimes awry, his limbs extended as if he was breathing his last, and his feet will be one minute intolerably hot and the next as insupportably cold ; he alternatively falls into profuse sweats and cold damps,

damps, endeavours to stale but cannot, he then throws himself down, rolls on his back, and continually turns his head towards his flanks. A stoppage of urine, always attends flatulent or windy cholic.

In this distemper the neck vein should be opened and a proper quantity of blood taken away, especially if it is a young horse that is disordered; the following remedies are also very serviceable in these cases.

Take salt of tartar two drachms, oil of juniper one drachm, sal prunella one ounce, and venice turpentine one ounce; make these into a ball with syrup of buckthorn, and wash it down with a decoction of juniper berries.

If on giving this ball the horse does not stale plentifully, give him a second in an hour or two, with the addition of a drachm of salt of amber: the horse should be gently exercised during the fit.

The following clyster is very useful in these cases, and may be thrown up at proper intervals. *Boil in three quarts of water long pepper, half an ounce, camomile flowers two handfuls, fennel and coriander seeds of each an ounce and anniseeds one ounce and an half; boil these until the quantity of water consumes to two quarts, then add gin half a pint, and nil of camomile nine ounces*

The underneath is an excellent receipt for a ball to remove gripings which have
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been

been caused by taking cold after hard exercise, or drinking cold water when very hot :

Make into a ball with any proper syrup peltitory of Spain one drachm, camphor two drachms, curmin and fennel seeds of each half an ounce, and anniseeds one ounce. These seeds must be powder'd,

Or give the following drink :

Take tincture of sena and salad oil of each half a pint, and philonium one ounce and an half; repeat this if necessary, giving it moderately warm.

When the horse is inflammatory or bilious, which is always accompanied with a fever, great heat, pantings, and the mouth is parched and dry, the horse stales scalding urine, and evacuates loose dung; when his water appears reddish or blackish, and has a fetid smell, a mortification is generally the result.

If this is the case, bleed the horse plentifully to the quantity of three quarts, and if the symptoms do not abate in a few hours repeat it; also throw up an emollient clyster with two ounces of nitre dissolv'd in it. This may be done twice a day, which will cool the inflam'd bowels:

Gum arabic water should likewise be given and the following cooling purging drink :

In a quart of boiling water infuse three ounces of sena, half an ounce of salt of tartar; let these infuse

infuse for two hours, then strain it and add three ounces of glauber salts and two ounces of lenitive electuary.

If the disorder proves irremovable by these remedies, you must give a strong decoction of jesuits bark, to the quantity of a pint every three hours, with a gill of red port wine and the following clyster :

In a quart of strong decoction of jesuits bark put two ounces of venice turpentine dissolved with the yolks of two eggs a pint of red wine and an ounce of disascordium; if this has the desired effect, and the horse mends, two or three mild rhubarb purges must also be given him.

The dry cholic is discovered by the following symptoms, viz. the great restlessness and uneasiness of the horse, the very high colour of his urine, the frequent and quick motion of his tale, and the black colour of his dung.

In this case the diet of a horse should be scalded, warm water gruel, and for his common drink dissolve four ounces of gum arabic in a quart of water and mix it with his water.

As to the cure of this distemper, the strait gut must be rak'd, the emolient clyster thrown up, and the purging drink given at proper intervals.

Of diseases incident to the eyes of a horse. In all external injuries which may happen to the eyes, such as cuts, bites, blows, &c. when the case is recent and attended with a running and swelling in the eye-lid, sponge the part often with warm verjuice or vinegar; if the swelling is considerable, fail not bleeding him immediately, and the part poultic'd with the pulps of boil'd apples, carefully seperated from their husks and seeds: conserve of roses mix'd with a small quantity of bole, the white of an egg and a little vinegar, will on trial be found of service.

The follow wash, if applied when the swelling abates, will complete the cure.

Dissolve in a pint of spring water half an ounce of compound peruse, sugar of lead two drachms, and white vitriol half an ounce; with this bathe five times a day.

Opening the veins under the eye when they are turgid, with a fine lancet, will be very serviceable.

In inflammations, if the horse be fleshy and of a gross constitution, a rowel will be necessary and bleeding must be repeatedly performed; for some days he should not get any oars, beans, &c. or any food which requires much chewing; therefore his diet should be scalded barley or bran, and the cool, opening draught should be given him once a day: if the eye-lids continue swelled and moist, bathe with the following wash:

Dissolve in three ounces of spring water half a drachm of sugar of lead, add a spoonful of red wine and an ounce of honey.

If a film or thick slough occasioned by the inflammation grows over the eye; Take some glass and reduce it to a very fine powder, so fine that it will pass or sift thro' muslin, and incorporate this with a sufficient quantity of honey and butter; put the quantity of a pea into the eye once a day, and the film will wear off by degrees.

When the eyes are affected by the teeth, the horse should be bled and the eye-water applied, with a rowel and a cooling purge.

In the wounds of the eye honey may be used alone, but if add a little myrrh to it, or sugar of lead to it, it will be better, and likewise following the directions respecting inflammations.

When a cataract is forming, rowel and bleed the horse, giving him two ounces every day of nitre nuade into a ball with honey; the part should be bath'd with vinegar, and at other times with an infusion of rose leaves, to which a sufficient quantity of sugar of lead may be added; cooling physic should also be given every third day.

When the eyes are sunk and perishing, foment them with the following: In a quart of lime water dissolve four drachms of crude sal armoniac

armoniac; to which add 8 ounces of brandy free from adulteration.

Proper Remedies for Colds. Take away better than two quarts of blood from the horse; he must also be kept very warm, have feeds of scalded bran given him, and as much warm water as he can drink.

But if the disorder instead of abating increases, the following remedies will perform the cure:

In a quart of boiling water infuse two ounces and a half of anniseeds, saffron one drachm and a half; then strain off and dissolve in it four spoonfuls of sallad oil, four ounces of honey, and one ounce of syrup of capillaire.

Give this draught every night, or one of the following pectoral balls:

Take of flower of brimstone, turmeric, carraway, anniseed freshly powdered, and elicampane each three ounces, a gill of mountain wine, powder'd saffron half an ounce, oil of anniseed one ounce, sallad oil and honey half a pound each; mix these well together and form into balls with a sufficiency of wheat flower.

He should likewise be warmly cloathed about the neck and throat, and have hot mashes and warm water.

If the cold is attended with a fever, give him the quantity of three ounces of nitre every day in his feeds or drink; and if he is

costive,

costive, his body must be kept open by dissolving four ounces of cream of tartar in his first water in the morning, which must be repeated during the continuance of the costiveness.

For Horses in fevers. Taking away two or three quarts of blood is the very first necessary operation, he should likewise have an ounce of nitre made into a ball with honey, given him thrice a day, which must be washed down with some thin water gruel, or else give him the following drink four times a day :

Infuse in two quarts of boiling water, nitre three ounces, liquerice root sliced half an ounce, and camomile flowers, sage and baum of each one handful ; when cold strain off and add to it a gill of lemon juice and sweeten it with honey.

The diet of a horse in a fever should be scalded bran given in small quantities, or dry bran slightly sprinkled with water ; pick'd hay should also be put into his rack, his cloathing should be moderately warm, and his water luke warm, which should be often and in small quantities.

If the fever is not abated by this treatment, bleed him again, repeat the drinks before ordered, and add to them two or three drachms of saffron, and throw up the following clyster as often as you think it requisite.

Boil in three quarts of water until they consume to two, camomile flowers and marsh mallows two handfuls each, fennel seed one ounce, and baum one handful ; when strain'd off, put to it one pint of linseed oil, and three ounces of treacle.

A good opening fever draught. Dissolve in oatmeal water, cream of tartar three ounces, glauber salts four ounces, and lenitive electuary two ounces, and one dram of powder of jalap.

The symptoms of a compound fever is when the horse is internally hot, and externally cold, and at other times hot all over, but is seldom, if ever extremely so ; his mouth is constantly moist, and his eyes languid, drinks but little at a time, not caring for it ; his staling is irregular and in small quantities, sometimes, at other times profuse, and of a palish or rather light yellowish colour, his dung is always moist and soft, and he feeds with a seeming voraciousness this minute, and the next quits it as if nauseated.

In this case the horse must be let blood, and repeated if necessary ; proportion the quantity of blood taken away, to his strength, fullness, &c. and then give him the following drink : Take one ounce of snake root, three drachms of saffron, one drachm of camphor dissolved in rectified spirits of wine, nitre two ounces and an half, slic'd liquorice root half an ounce, and

and baum, sage, and camomile flowers one handful each; infuse these ingredients in two quarts of boiling water, to which add a gill of white wine vinegar, and make it palatable with honey. Give him a pint at a time four times a day.

Horses afflicted in this manner should be kept to a regular uniform diet, they should not have oats nor beans, but may have plenty of scalded, or (if they refuse that) sprinkled bran, and good hay given them; they should also drink plentifully of blood warm water.

If the distemper still continues, give the following compound fever balls.

Take mithridate half an ounce, saffron one ounce, saffron one drachm and a half, snake-ounce powder'd finely three drachms, and myrrh and contrayerva root each two ounces; make these into a ball with syrup of buckthorn, and give one three times a day, till you see signs of amendment, washing them down with two or three horns of an infusion of snake root, honey and vinegar, or lemon juice.

Dissolve one drachm of camphor in one ounce of rectified spirit of wine, to which add a piot of distill'd warm vinegar, and two ounces of mithridate: of this infusion give a pint every four or five hours.

If the horse purges moderately, do not endeavour to suppress it, but rather encourage it;

it; on the other hand, if the horse is costive you must strive to remedy it, by throwing up some mild purging clysters.

When a horse grows feeble by a continuance of a purging, immediately add discordium to his drinks instead of the mithridate, and to the same quantity.

But if all these remedies prove ineffectual, and the horse declines in his flesh, if he entirely forsakes his meat, swells about the joints, becomes hide bound, his eyes appearing fixed and dead, his tail raised and trembling, his breath strong and bad scented, and he evacuates a foetid dirt coloured dung or matter.

When a horse recovers, let his diet be very light and his feeds small, gradually and proportionably increasing their quantity as he gathers strength.

When a horse is in a fever, the head and throat should be kept very warm.

Of the glanders. The only remedies that can be service of this distemper, are those which I have prescribed for colds, and those which I shall direct for the strangles.

For disorders in the bladder and kidneys. When a horse is disordered in his kidneys, bleed him plentifully, which prevents inflammations, if a fever attends the afflicted horse, throw down the following balls three times a day,

day, with better than a pint of the decoction of marsh mallows. In the decoction dissolve honey 1 ounce, and gum arabic 6 drachms.

Take nitre or sal prunella half an ounce, sparmaceti one drachms, lucatilli's balsam one ounce, and japan earth half an ounce; make these ingredients into a ball with a sufficiency of honey.

If the horse still continues to stale with difficulty, give the following diuretic ball:

Make into a ball with a sufficient quantity of honey, the following ingredients; powder'd myrrh three drachms, nitre six drachms, venice soap one ounce, and Strasburgh turpentine one ounce and an half: to wash down use the marsh mallows decoction with a gill of holland geneva added to every quart, instead of dissolving the gum arabic in it as directed before, but the honey must be continued.

If the suppression of urine arises from an inflammation of the parts, give the following stimulating diuretic balls once in every five hours.

Take oil of juniper three drachms, camphor one drachm, oil of turpentine one ounce, sal prunella six drachms, and juniper berries finely powder'd one ounce; make these into proper sized balls with honey, which wash down with four horns of the marsh mallow decoction prepared as last directed.

As to external remedies for the removal of this complaint, the horse's veins should be rub'd with a mixture of oil of turpentine and oil of amber, a poultice of horse rhadish, mustard seed, green soap, and garlic laid over them: the horse should also have 3 drachms of calomel given him over night, and a gentle purge next morning.

A diabetes of a long continuance in old feeble horses is incurable; but in young ones the following drink I have found by repeated trials of its efficacy, to be very serviceable in this case:

In two gallons of lime water boil jesuits bark four ounces, tormentil and bishort root of each two ounces; when the water has consumed by boiling half its quantity, it is fit for use.

Of this drink give three pints a day at separate times.

A strong allum posset to the quantity of a quart at a time, given three times a day, will be very beneficial should the above fail -

For the disorder called Molten Grease. Bleed the horse plentifully, and repeat the bleeding for two or three days in a larger or smaller quantity, as the urgency of the symptoms may require; two or three rowels should be put in as soon as possible, and a cooling emollient clyster thrown up three times a day. You should also give every morning and evening

ing an ounce and a half of cream of tartar dissolved in a decoction of turnips and linseed till you perceive the fever abates; a couple of gentle purges, composed of lenitive electuary and glauber salts must be given.

Of the Vives and Stangles. When accompanied with a fever, oatmeal water with an ounce of nitre or better must be given him twice a day, mashs of barley or scalded bran should also be given, and clysters thrown up at intervals, but he should not be bled, except the fever runs high and the swelling seems to portend a suffocation; in this case bleeding moderately is very adviseable, and the swelling must be poultic'd, till a suppuration ensues, then it must be nicely opened and afterwards spread over with the following ointment.

Mix and make into an ointment birtwort and ginger one ounce each, rosin four ounces, oil half a pound, bees wax one quarter of a pound, and linseed reduced to a fine powder half a pound, to these add leaf tobacco half a pound; this last must be first boiled in a quart or three pints of red wine, until half that quantity is consumed.

If this distemper is attended with a running at the nose, which may bring on the glanders if it continues too long; a pint of the following drink given night and morning will be of service.

Boil in six quarts of lime water until one third part or better is wasted, the following ingredients : snake weed and tormentil four ounces each, shepherds purse two handfuls, guiacum woods, shavings of hartshorn, and pomegranate bark, or oak bark eight ounces each, then strain off for use.

When the horse is upon the recovery, the salt marsh must be used for a month. If the salt marsh lies at too great a distance, give him half an ounce of the following mixture once a day for a fortnight :

A sufficient quantity of properly prepared antimony, sulphur, linseed powder'd and fen-nigreek.

Of an Asthma, with directions how to treat Horses in that manner. Bleeding is necessary in this distemper and moderate exercise, and feeding and watering the horse sparingly ; when the cough is very severe a vein must be immediately opened ; he should also have given him once a day in his corn half an ounce a day in his corn half an ounce of liver of antimony and sulphur, and if he is very costive, gentle purging clysters must be thrown up at proper intervals.

Of the disease known by the name of the Farcy. Proper bleeding accompanied with exercise, in general performs the cure ; but in case this proves ineffectual, and the corded veins will not subside by this treatment, but
the

the lumps increase fast, circle them round with a red hot instrument fit for the purpose of cauterizing; when this is done, dress the pustules with oil of vitriol, and after proper bleeding give him the following drink for 4 mornings :

Boil in three pints of urine until half is consum'd dodder of rhyme two handfuls, dry or green celandine and rue one handful each; then strain and add tutty half an ounce, cream of tartar, armenian bole, and factitious cinnabar one ounce each, and lapis calaminaris ounce.

This must be given fasting for two mornings running, and every other morning for two more, nor must the horse get any food for four hours after he takes it; when you have treated him in this manner, throw liver of antimony mix'd with sulphur and fennugreek in his feeds of corn.

After this management should there remain any farcical swellings on his joints bathe them until they subside with this mixture once or twice every day, as you see necessary :

Dissolve in two ounces of spirits of wine, of bole armoniac one ounce, camphor half an ounce, oil of turpentine three ounces, oil of vitriol two ounces, to which add of double-distill'd vinegar one pint.

What is commonly called a water farcy must be treated in the same manner for it pro-

ceeds likewise from a viscosity and sluggishness of the blood.

Of wind galls. As to the treatment of wind galls, restrungents are necessary, but should these prove of no use, an incision must be nicely made and the glutenous matter let out.

Then take besilican pitch, rosin, tar, of each an equal quantity, melt all together, and make into an ointment with a sufficiency of bees wax.

Of wounds in general. The lips of all fresh wounds should be brought into contact by future or by proper bandage, and should the wound bleed much from a divided artery, you must stop it quickly by tying it up; or if you cannot get at the artery in this manner, apply some lint dipp'd in a strong solution of blue vitriol or hot oil of turpentine, to the mouth of the bleeding vessel, keep it there closely bandag'd till the bleeding is stop'd; and no danger of its bursting away.

As to the stitching up of wounds, one stitch is sufficient for a wound two inches long, but in very large wounds which will require more, the stitches should be a full inch from each other.

The following excellent green ointment will effectually cure any common wound.

Make into an ointment of a proper consistence, the following ingredients, sound birtwort

wort finely powder'd two ounces, rosin and bees wax four ounces each, hog's lard fourteen ounces, tobacco finely powder'd nine ounces, when strain'd off, add the remains of a quart of red wine, in which half a pound of leaf tobacco has been boiled until it consumes a pint.

Wounds in the legs, tendons or joints, must be dressed with balsamic applications without any greasy mixtures, for instance take the following, viz.

Mix up a sufficiency of tincture of myrrh, venice turpentine dissolv'd with the yolk of an egg and honey, of each an equal quantity.

In case of a fever, you must treat the horse in the same manner as you do in other fevers in the chapter on fevers; I have expatiated sufficiently on that subject.

In gun-shot wounds, the ball must be extracted if it can be fetched away without too great a disturbance of the parts, the wound should afterwards be dressed with the old digestion of venice or common turpentine divided with the yolks of eggs, to which you may add some honey and tincture of myrrh.

When a horse is scalded or burned by gun-powder and the skin is separated, anoint the part with linseed oil, and apply a plaister of bees wax and oil; if blöbs of hot water or humour are underneath the skin, dress the wound with the wound ointment, and oil of turpen-

tine, if the horse is feverish bleed him, and throw up cooling clysters, and treat him as I have ordered in simple fevers; when the skin is unbroke, keep it bathed with camphorated spirits of wine and salt bandag'd on the part affected: here I must observe, that all saline and spiritous applications are best when the skin remains intire.

Of Splents, Curbs, Bone-spavins, and Ring-bones. When a splent is the case, and that it occasions a lamneis, otherwise it will be adviseable not to tamper with it; let the hair be clipt off and after beating it with a blood stick, rub it well with the following ointment:

Take sublimate in fine powder and Spanish flies, powder'd half a drachm each, tincture of euphoribium forty drops, oil of origane one ounce and an half, and nerve ointment one ounce.

No kind of astringent remedies can be of any service in bone-spavins and ring-bones; caustics, are also are very pernicious, therefore firing and blistering immediately are all that is requisite.

Curbs are cured, or at least remedied by the same method of treatment as splents, should that process prove ineffectual, firing is the only remedy.

Of a Pleurisy and Inflammation of the Lungs. The symtoms of a pleurisy are almost exactly

ly similar to those which a horse shews when troubled with the gripes, but with this difference, in a pleurisy the ears and feet of a horse are always very hot, his pulse very quick, and his fever continually increasing.

In an inflammation of the lungs, many are attended with a strong fever, and a short cough.

To remedy a horse in both these distempers he must lose three quarts of blood the first bleeding, and the next day two quarts more, if after this treatment, the symptoms do not diminish, repeat the bleeding: put rowels in at each side of the breast; take away a quart of blood at a time, and that frequently.

The following pectoral balls should also be given him thrice a day, wash'd down with barley water:

Make into a ball, with a sufficiency of honey, sparmaceti and nitre one ounce each, and oil of anniseed forty drops.

Immediately after he has taken the balls, give him a pint of the decoction of barley water, figs, liquorice root, and juice of lemons; with this decoction you may also wash down the balls.

Emollient clysters should also be injected at proper intervals, with an addition of cream of tartar.

When the lungs are oppress'd with a short cough, three or four horns of the decoction
may

may be given 4 time times a day, mixed with four spoonfuls of honey and linseed oil; the quantity of four pints a day a strong decoction of rattle snake root, sweeten'd with honey may also be given, which will attenuate the blood and lend a great help towards dispersing the inflammation.

Of a Consumption. The first and principal step to be taken towards a cure is bleeding frequently, but in small quantities at a time, and whenever the breath seems much oppressed: this must be repeated, the quantity of a pint of blood will be fully sufficient to take away at a time.

The whole stress of the cure lies on mercurial purges, and the following alterative powders must be given intermediately to the quantity of an ounce a day:

Take cinnabar of antimony finely powder'd one pound, and gum guaiacum and nitre powder'd one pound each; mix these well together for use.

Of a Disorder call'd the Staggers. In this disorder, the best method of proceeding is to open two or three veins at once, and thereby discharge at least four quarts or blood immediately; this expedient (except where the convulsions are very strong) will perform a complete cure.

When strong convulsions render the disease more difficult, a rowel in the jaw, and one
under

under the breast will prove of infinite service, and the horse should also be bled in the mouth.

The following inimitable composition will also be very useful, a pint of which should be given every three hours :

Boil slowly in a gallon of forge water, till one quarter is waisted away, the following ingredients, viz.

Penniroyal and rosemary, of each one handful, miletoe two handfuls, wild valerian two handfuls, and rue a handful, then strain off, and add of opium a drachmn, and assa foetida four drachms.

Of the running thrush and canker, In a running thrush the only care necessary is to keep the feet clean and frequently washed ; but should it rise to an imposthume, you must open it and bathe the sore with a strong solution of vitriol in water, at the same time bleed the horse and give one or two of the diuretic balls prescribed for the greafe.

When a canker is the case. carefully pare away all the fungous flesh and apply pledgets of tow steeped in the following ointment.

Mix well together sublimate two drachms, double spirit of nitre half an ounce, verdigrease finely powdered one ounce, and one pound of honey.

Of accidental wounds in the feet, and diseases incident to those parts. When a nail or any
in-

injurious body is lodged in the foot, it must be first extracted, and then the wound washed with oil of turpentine ; afterwards pour into it a mixture of turpentine, melted pitch and tar, then fill up the foot with bran moistened with oil of turpentine ; if this process proves useless, the wound must be laid open to the bottom, and dressed with the tincture of myrrh, and afterwards with a detergent medicine.

When cuts in the feet are the case, wash them directly with brandy, and apply a proper ointment, but I recommend as the most expeditious remedy, the pounding of nettles and salt well together in a marble mortar, and then binding this poultice on the part affected.

As to bruised feet nothing more can be done with respect to them, than to stuff them with a mixture of soft soap, chamber lye and linseed oil boil'd together, and made properly thick with hogs or cows dung.

When a horse has naturally soft feet, they must be kept as dry as possible ; no more can be done, for any attempts to make them harder will only help to lame the horse : hard and brittle hoofs should be kept moist by frequently filling them with either of the dungs above mentioned, and should also be frequently rubb'd with the following ointment :

Melt well together tar and train oil, of each
one

one pound, venice turpentine and bees wax of each two pounds, and nerve oil six pounds.

As to diseases incident to the feet, sand cracks are either occasioned by treads or blows ; they are a small cleft on the outside of the hoofs, and when they run through the ligaments that unite the hoof with the coronet, they are apt to breed a quitter which is very dangerous, but when the crack only penetrated through the hoof without any matter being formed underneath, it admits of an easy cure, which must be set about in this manner :

In the first place pare the edges of the crack skin, then dress it with the tincture of myrrh, afterwards put on the following mixture, and over it a bandage tyed very tight :

Blend well together till you make a proper ointment the following ingredient of each a sufficient quantity, viz. bees wax, venice or strasburgh turpentine, and deer's suet.

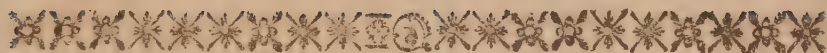
But if the crack is very deep, and matter formed underneath, it will be absolutely necessary to fire it and to apply a strong charge, and then to turn the horse out to grass for three or four months.

Quitters are ulcers formed between the hair and the hoof of the horse, and usually on the inside of the quarter ; it generally proceeds from treads and bruises, and sometimes from gravel, which by working its way up-
wards

wards lodges about the coronet ; if it be only superficial it may be cured by the preceeding ointment.

But should there be a matter formed under the hoof, part of the hoof must be carefully pared away, and all the funguous flesh cut out ; and if the bone is carious it must be scraped clean, and the ulcer dressed with the same medicines and treated in the same manner as the canker.





P A R T IV.

The Gardener's Kalendar,

*How to order the Orchard, Kitchen and
Flower Garden.*

J A N U A R Y.

LAY the roots of your fruit trees bare, and if the weather prove open lay good dung therein. Gather your cions for grafts, before the buds come out, and cleanse your trees from moss; plant quick sets, transplant young fruit trees, and towards the decrease of the moon prune the old ones, set young, and prune your old vines, begin to prune and nail your wall fruit; set peas and beans, sow lettuce, chervil, spinnage, radish and other sallading in hot beds; turn up your bee-hives, and sprinkle then with a little warm and sweet wort.

P

Flower

Flower Garden.

Be careful to preserve your best gilliflow-
ers, auriculas, anemones and ranunculas
from too much wet, frost or snow; as like-
wise your carnations and such seeds as are
liable either to be wash'd away, or over chill'd
by the snows laying too thick, be careful to
cover. About the middle of this month,
'tis necessary that you plant your anemone
roots and ranunculas; keep your conservato-
ry where your greens and tender plants are
kept shut close, having convenient avenues
for the sun to shine therein, and if it freeze
extremely keep a small charcoal fire therein.
Set traps for vermin, and towards the end
of the month earth up with fresh and light
mould the roots of such auriculas as has been
uncovered by the frost.

F E B R U A R Y.

Orchard and Kitchen Garden.

Begin to graft apples, pears, plumbs and
cherries, cover the roots of those fruit trees
left bare the last month and prune such of
your fruit trees and vines as could not be
done then, for now is the most proper time to
bind, plaish, nail and dress, being less subject
to frost, be still cleansing your trees of moss
and webs, of caterpillars from the tops of
twigs,

twigs, plants, vines, &c. Sow kernels of all sorts and stony seeds, also sow and set all sorts of asparagus, radish, corn fallads, parsnips, carrots, onions, garlick, marygolds, &c. plant cabbage plants, potatoe, parfly, spinnage and pot herbs, steep melon and cucumber seeds in new milk twenty four hours, and sow them in a hot-bed, keeping it cover'd up till they appear, and then uncover it in clear and sunshine weather, observing to cover them again at night, still keeping close your conservatory, watering the roots of your lemon and orange trees, &c. with water wherein dung of sheep has been steep'd in the air for three or four days, taking great care not to wet the leaves, lest you destroy the plants.

Flower Garden.

Secure your choice flowers in beds, with tiles as soon as they appear above ground, air your hous'd carnations on warm days, and mild showers, setting them in again at night, sow auricula seeds in good mellow earth, plant antemonies for latter flowers, sow lark spurs, &c. plant your boxes with seeds therein of a choice nature where they may be secured from sharp winds and violent rains.

Orchard and Kitchen Garden.

Graft all this month, unless the spring prove extraordinary forward, taking great heed to

graft your cion on that side of the stock which is left exposed to the south wind, and be careful that the rain get not in the clefts of your young grafted stocks, shake and bind up weak shrubs and plants. Plant peach and nectarines early, not cutting off the top roots as in other trees, prune last year's grafts and cut off the heads of your budded stocks, top your rose trees near a leaf bud with your knife, cutting also the dead withered branches, slip and set sage, thyme, rosemary, lavender, &c. Sow endive, succary, leeks, radish beets, parsnips, parslly, sorrel, skirrets, buglos, burrage, chervil, fellary, smallage, allisanders, &c. In the beginning of the month sow also lettuce, onions, garlick, purslain, turnips, carrots, cabbages, peas, cressès, fennel and marjoram; transplant medicinal herbs, cover your melon plants with glass 'till you remove them string your strawberry beds, and uncover asparagus which you may now transplant to new beds. By this time the bees sit, therefore 'tis necessary to keep them close night and morning, if the weather prove foul.

Flower Garden.

Plant box for borders. Sow pinks, sweet williams, carnations, wall and stock gilliflowers, french honeysuckles, primroses, larkspurs, Indian scabios, &c. On your hot beds sow African marigolds, aramanthus, nasturtium

um indicam, the sensible and humble plants' the African and nasturtium indicum will come up in a cold bed, in the middle of the month transplant gilliflowers and fibrous rooted plants, new earthing up those unremoving. Cover your choicest tulips; sow stock gilliflowers at the full moon, to produce double flowers, and at the latter end of the month if the weather be not too cold, open the windows of your conservatory, which by degrees will harden your greens to bear the air.

A P R I L.

Orchard and Kitchen Garden.

Sow sweet marjoram, hyssop, basil, thyme, winter favory scurvy grass, lettuce, purslain, gilliflowers, radishes, marigolds, &c. Set slips of artichokes, lavender, thyme, penny-royal, sage, rosemary, &c. Set French beans and sow turnips towards the middle of the month; begin to plant forth your melons and cucumbers, gather up worms and snails (at all times) after the evening showers, open your bee-hives, for now they hatch, look careful to them and prepare hives, &c.

Flower Garden.

Continue hot-beds for such exotic plants as will not arrive to perfection without them, till the air and common earth be endowed

with sufficient heat, to preserve them abroad. Transplant such fibrous roots as you had not finished in March, such as violets, hepatica, primroses, &c. Shelter your feeding auriculas from the sun, take your Indian tube roses, parting the off-sets carefully, lest you break their fangs, then put them in natural, not forced earth, placing a layer of rich mould beneath and about the natural earth, which will nourish the fibres, but not to touch the buds, then plunge your pot into a hot bed of a moderate warmth, giving them no water till they spring, then set them under a south wall, watering them freely in dry weather, and expect incomparable shower in August. Set out flos cardinalis, slip and set marums, water anemones, ranunculas and plants in pots once in two or three days, if the draught requires it, observing to preserve them from storms of rain and hail. In fair weather you may venture to expose some of your tender shrubs, excepting oranges, which must be left in till next month: you may now graft oranges, lemons, pomgranets, jessamines, &c. Mow carpet walks, and forget not to weed hoe.

M A Y.

Orchard and Kitchen Garden.

If you find your buds ready, you may inoculate; sow purslain to have it young, lettuce,

tuce, large sided cabbage, &c. Look carefully to your melons, and towards the end of the month uncover them, set your bees at liberty, and expect swarms.

Flower Gardens.

Bring your oranges forth, transplant and remove them; transplant amaranthus, flos africanus, nariturtium indicum, miribania, peruvians, &c. from your hot beds in good rich soil, as much as may be in the sun; give all your housed plants which you do not remove, fresh earth at the top, loosening the rest with a forth; take great care that you hurt not the roots, and be sure to cleanse them from the dust they have contracted in the conservatory. Plant your stock gillflowers in beds at full moon, shading them, after mid-day, as also your carnations, gather anemone seed as the dew rises, and preserve them dry. Cut the stalks of all bulbous roots you find too dry. Sow hot and aromatic herbs.

J U N E.

Orchard and Kitchen Garden.

Cleanse vines of exuberant branches and tendrels, stopping the joint. Innoculate peaches, apricots, and plumbs, apples, &c. Gather herbs at the full of the moon to keep dry, sow lettuce, chervil, radish, &c. Distil
aro-

aromatic plants. Look to your bees for swarms and casts. Destroy insects, &c.

Flower Garden.

Transplant autumnal cyclamens, take up iris chalcidon, gather the ripest seeds of the choice and preserve them dry. Take up your tulips and ranunculas (the stalks being withered after rain, and dry the roots well. Lay gilliflowers, which will take root in six weeks, and be ready to transplant into a light loomy earth, you may plant six or seven in a pot, but be careful to keep them from too much rain. Slips of myrtle set in a cool and moist place, do at this time frequently take root; such gilliflowers are now blown, save for seed, letting them have but a few layers to nourish, and but few buds; be careful to save none for this purpose that break their pods, preserving them wet as much as possible.

J U L Y.

Orchard and Kitchen Garden.

Water your planted trees and layers, prune apricots and peaches, saving as many of the youngest and most promising shoots as are well placed, cleanse wall-fruit from superfluous leaves, stop the exuberant shoots of vines at the second joint, remove your large sided cabbages planted in May, to head in autumn

autumn ; let such garden herbs as you would save run to seed. Sow latter peas, lettuce, chervil, &c. for young fallading ; keep weeds from running to seed, and being to hoe ; gather the snails that infest wall fruit, but pull not off the bitten fruit, for then they will begin with others ; straiten the entrance of beehives, and assist them in killing drones, wasps, &c. by setting glasses of beer mingled with honey for them.

Flower Garden.

Slip stocks and other lignous plants and flowers, from henceforth to Michaelmas ; you may lay gilliflowers and carnations for increase, you may also lay laurels, myrtles, jessamines and other greens. Clip box after rain, water your planted shrubs and layers. Take up early your autumnal clynamens and transplant them, gather early their seeds, and sow them presently in pots. At the latter end of the month, sift your beds for off-sets of tulips, anemonies, and ranunculusses ; you may also sow anemony seeds, keeping them tolerable moist.

AUGUST.

Orchard and Kitchen Garden.

Inoculate early, if you began not sooner. Prune off all superfluous brants and shoots of
the

the second spring, pull up the suckers, clip roses that have now done bearing. Sow colliflowers and cabbages for winter plants, corn fallad, lettuce, marygolds, carrots, parsnips, turnips, spinage, onions, curld endive, angelica, scurvy grass and such plants as will endure winter, pull up ripe onions and garlic, transplant such lettuce as you would have abide all winter. Gather olitary seeds, and clip and cut all such herbs and plants before full moon, within a handful of the ground,

Flower Garden.

Gather seeds of shrubs which you find ripe. Now is the season for orange trees to bud, inoculate therefore at the beginning of this month, take up bulb roots of lillies, &c. dry them and lay them up; plant anemones to have flowers all winter, now earth your pots of auriculas, transplant and divide their roots into a light rich earth, sow larksheal, columbines, iron coloured fox gloves, hollihocks, &c. About Bartholomew-tide is the only secure season to remove and lay your perrenial greens, oranges, lemons, myrtles, phelereas, olianders, jessamines, arbutus and other rare shrubs, as pomgranates and whatever, is subject to be injured by frost.

SEPTEMBER.

Orchard and Kitchen-garden.

In dry weather, gather such winter fruits as are ripe, and daily pick up the windfalls; if you mean to preserve them, release inoculated buds. Sow lettuce, radish, cabbage, spinnage and colliflower seeds, winter herbs and roots. Transplant most eating and physical plants; plant strawberries from the wood, and earth up your winter plants and sallads, set fourth your cabbages and colliflowers that were set in August. Take up your bees and straighten the entrance of such hives as you leave.

Flower Garden.

Sow auriculas, crocuses, &c. Stake your autumnal flowers and plants; take up your gilliflowers earth and all, which plant in pots or shady borders. About Michaelmas if the weather be fair and not foggy, retire your choice of greens and rarest plants, being dry, into your conservatory, ordering them with fresh mould, taking away some of the uppermost, and stirring up the rest. Fill the cases with rich and well digested soil, leaving the doors and windows still open, and giving them much air, so that the winds are not
 Sharp

sharp and the air foggy, shut them up by degrees: as the myrtle will endure abroad near a month longer, set such plants as will not endure house, into the earth abroad, pots and all full three inches beneath the surface of the earth, covering them with glasses well cloathed with sweet and dry moss, but upon warm days and gentle showers uncover them.

OCTOBER.

Orchard and Kitchen-garden.

Trench ground, plant and transplant all sorts of fruits trees, having lost their leaves, and that so soon as they fall, but take no trees for the wall of above two years grafting, lay bare the roots of old, unthrifty, or overhasty blooming trees, gather your remaining fruit, the weather being dry, in the decrease of the moon. Plant and quash quicksets, remove grafts after the second year, except dwarfs which may stand till the third. Set fruit stones three inches deep, the sharp end uppermost, cover them with fern or straw, which take off at spring; you may yet sow Genoa lettuce and radishes which will last all winter.

Flower Garden.

House your hyacinthus tube rose, you may continue sowing as last month, plant some
anemones

anemones and ranunculas, which before cover from frost, but give them air at all temperate intervals, remove your gilliflowers from much rain; all sorts of bulbous roots may be now buried. Beat, roll and mow carpet walks and camomile, finish your last weeding.

NOVEMBER.

Orchard and Kitchen Garden.

Plant young standard and wall-trees; furnish your nursery with stocks to graft on the following year; continue to set and transplant set trees; turn your melon ground, mixing it with rich earth, and lay it in ridges against spring. Trench ground for artichokes, sow and set peas and beans, lay up in cellars carrots, turnips, parsnips, cabbages, &c. For seed on spending, crop asparagus, covering it with dung, and make beds to plant in spring, take up potatoes for winter spending.

Flower Garden.

Sow auricula seeds, plant fibrous roots, roses, althea frutex, syringas, peonies, &c. if the weather require it, quite inclose the tender plants, in your conservatory, and if the frost is severe, kindle some charcoal, which when done smoaking, put in a hole,

in the middle of the floor, when the sun shines you may expose them through a glass, but be careful to inclose them before the sun leaves them, otherwise they will sustain damage; be very sparing to water them, unless they become dry and it doth not freeze, you may with care refresh them with a little water mingled with sheep's or cow's dung, be sure never to bestow any water on your aloes or sedums all the winter, but should they become dry to an extreme you may set them to air on a fair day. Plant forest trees for walks in this month, and they shall thrive.

DECEMBER.

Orchard and Kitchen Garden.

Plant vines and stocks for grafting, prune and nail wall fruit (or if you please may defer it a month or two longer) and standard trees, set all sorts of kernels, stones, &c. as in the last month, trench ground and dung it for borders, &c. Turn and refresh autumnal fruit.

Flower Garden.

Set traps for vermin, preserve your anemones, &c. from too much rain, or violent frosts; keep the doors and windows of your conservatory well opened; in open weather
set

set your ranunculas in a bed of rotten thatch, or straw with good mould above and below, you may also set your best anemones in a little rich loomy earth, sifted through a wire sieve. Preserve your fountain pipes from cracking by frost, in covering them with warm horse litter.

Directions for Pruning.

When a tree has produced two well disposed branches with some weak ones intermixed, they should be shortened, equally to the length of five or six inches; and if the position of the two branches be irregular, there must be only one left to begin the formation of your tree.

A tree will sometimes shoot, five, six, or seven branches, the first year; when this happens, three or four only of the best branches are to be preserved.

A multitude of branches in the first year, is not always a sign of vigour; for they sometimes prove weak, occasioned by the infirmity of the roots: in pruning, generally a vigorous tree cannot have too many branches, if they are well disposed, nor a weak one too few.

The sap of all trees must be kept within due bounds, and a greater liberty is to be allowed to strong trees than to weak ones; for which reason strong and vigorous branches are

left of a greater length than feeble ones : and it is best to prune weak, sickly trees early, that the sap may not be too much wasted.

In the pruning of wall fruit trees, all branches shooting directly forward are to be cut off close to the branch they spring from ; and the utmost care must be taken to prevent their being too much crowded with wood, it being often necessary to take off even bearing branches, to preserve your trees in beauty and health ; for it is impossible too great a number of branches should be supplied with juices as they ought ; and if they are not, either the blossoms will drop off, or the fruit will never ripen.

You should ever be careful to preserve a convenient space between one branch and another in all prunings ; also that one branch does not cross another, which offends the sight, unless it be to cover a space in the wall, which looks still more disagreeable ; a slender bearing branch may, notwithstanding, sometimes be permitted to steal behind the main body of the tree, and be no offence to the eye.

That a tree may be the better disposed to bear fruit, the branches should be carried horizontally as much as possible ; for the more perpendicular the branches of a tree are led, the more they are inclined to run into great wood and barrenness.

Small weak branches, shooting from the like, should be cut away, as should all shoots put forth in autumn.

When an old tree shoots stronger branches towards the bottom than the top, and the top is sickly, it must be cut off, and a new figure formed from the lower branches; but if the top be in good health, you must cut off the lower ones, unless it be a few that are well placed.

Where old trees are in a weak condition, to preserve them, they are to be disburthened totally, leaving a few branches only shortened to five or six inches.

Having thus laid down the principal rules for pruning in general, I now come to the management of the peach, and other fruit trees in particular.

Among a number of peach trees, it is easy to discover such as are proper for your purpose, it being, after two or three years planting, so apt to put forth its bearing branches.

When peach trees are vigorous, it is best to defer the first pruning till they are ready to blossom, when you may be at a certainty in preserving those branches which are most promising of fruit, and then to shorten them as they require.

You may soon discover the fruit-bearing branches by their swelling buds, and you should reduce them to the length of five or

six inches ; the last year's shoots may be left ten or twelve inches long.

In the space of about three years, all the wood must, at several prunings, be taken away ; but in the mean time the wall is to be furnished with other wood.

When you have reduced your tree to beauty and order, you have little to do but thinning your fruit till Midsummer, when the shoots are to be shortened and fastened to the wall, giving the fruit the advantage of the sun as much as possible.

If the peach tree makes over haste in its bearing ; 'tis a sign of infirmity, and must be managed, by pruning the branches short, and plucking off most of the blossoms or fruit ; which it is much less difficult to do when a peach is over vigorous, for then nature is apt to make a confusion, which requires the greatest skill to know what branches are fit to be chosen, and what rejected.

The peach tree requires a second, and sometimes a third pruning ; the last of which is to be performed about the middle of May, or in June or July.

The apricot and nectarine may be pruned in the same manner as the peach ; but then it should be observed, that the apricot is more apt to run to wood than any other of these kind of wall-fruit trees.

Directions for Grafting.

The usual ways of grafting are, in the cleft—in the bark—by approach, and whip-grafting.

Grafting in the cleft, or slip-grafting, is performed on the cherry, pear, and plumpstocks, in the manner following :

When you have chosen a stock, in a smooth place, cut off the head of it, sloping ; then, with your knife make the top horizontally even ; which being done, make a slit of near two inches deep down the middle of the stock ; in which fix a cyon, sloped on each side from a bud, and closing the bark of both exactly, tie them round with oafs.

When you have thus finished your grafting, put a quantity of clay and horse dung, tempered together, round the stock and lower part of the cyon, in doing which, be careful not to disturb the latter.

Grafting in the bark is generally performed only on apples, by cutting the head of the the stock as already directed ; but instead of flitting it, slit only the bark a little above an inch on the south west side, or as long as the sloped part of the cyon ; then loosening the top of the bark with your knife, put in the

the cyon (being prepared with a flat rope about an inch long, ending in a point, and begun from the back-side of an eye; and closing it as above, cover it also in the same manner with clay.

When either an apple, pear, plum, or cherry-tree, wants a branch to make the tree uniform, a graft may be put into the side without cutting the head of it.

Grafting by approach, or inarching, is performed when a stock grows so near another tree, the fruit of which you would propagate, that it may be joined with a branch of that tree, by cutting the sides of the branch and stock about three inches long, and fitting them, that the passages of the sap may meet; in which posture let them be bound and then clayed.

When they are well cemented, cut off the head of the stock about four inches above the binding; and in March following, having cut off the stub that was left of the stock, and the cyon underneath, close the grafted place, that you may be certain it will subsist by the stock only.

This manner of grafting agrees best with vines, pomegranates, oranges, and such like shrubs.

When the stock and cyon are of the same bigness, the operation of whipping is performed,

formed, by sloping the flock and cyon much a bout an inch, so as to make them fit, and then tying them together, and claying the place.



A COLLECTION of RECEIPTS.

o make ENGLISH WINES.

To make Orange Wine.

TAKE ten gallons of water, and twenty pounds of sugar, boil it half an hour, skimming all the time ; have ready the peels of an hundred oranges in a tub, so thin pared that no white does appear ; then pour on your boiling liquor, and keep it close ; you must use none of the skins or seeds, but pick the meat clean out, and when the liquor is blood warm, put it in, with six spoon fulls of new yeast ; let it work two days, then put it into a vessel with a gallon of white wine, and a quart of brandy ; putting a lump of sugar into every bottle.

To make Cowslip Wine,

Take thirty gallons of water and sixty pounds of sugar, boil then together three quarters of an hour, skimming it well, then put into a tub and let it stand 'till it be cold ; then put in eighteen pecks of cowslips, two dozen

dozen of lemons pared very thin, and put the skins into the liquor ; then squeeze the juice very well out of the lemons, put to it a gill of new yeast, and put it into your liquor ; let it be beaten three times a day for three days together, then tun into a barrel cowslips and all ; when it hath done working, bung it up close for three weeks, then bottle it ; be sure to put a good weight of sugar to it.

To make Gooseberry Wine.

Take your gooseberries before they be over ripe, bruise them in a wood bowl, but not too small, lest you bruise the seeds ; then measure them, and to every gallon of bruised berries, put two gallons of cold water, stir them well together, and let them stand a night and a day close covered ; then strain your liquor from your berries into a tub ; if it comes thick, you may strain it through a bag ; to every gallon of liquor, put two pounds of loaf sugar dissolved, stir it well together, then put it into a barrel, and let it work two days ; then bung it up for a week and draw it out of the barrel through a bag ; put the dregs out of the barrel, and wash it out with a little of the liquor, and to every gallon of liquor add half a pound more sugar, stir it well together, and put it into the same barrel again, bung it up for a month, then it will be fit for bottling.

To make Currantberry Wine,

Gather your currants full ripe, strip and bruise them, and to every gallon of the pulp, put two quarts of water, let it stand in a tub twenty four hours; then run it through a sieve and to every gallons of liquor, put two pounds of fine sugar, stir it till it be well dissolved, then put it into a clean barrel, let it stand two days, then draw it clean off, and put in half a pound more sugar to every gallon, stir it in well to dissolve it, wash your barrel, bung it up as close as you can, and let it stand six weeks, then bottle it; put a little sugar in every bottle. When you bruise the berries, take care that you do not bruise the seeds.

To make Cherry Wine.

Pull the stalks, brise the cherries, without braking the stones, press them hard through a hair bag, and to every gallon of liquor, put two pounds of sugar; fill your vessel, and let it work as long it makes a noise, then stop it up for six weeks, and when fine, draw it into dry bottles, putting a lump of sugar into every bottle; it will be fit to drink in three months.

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